

Figure 1

20150102 013102

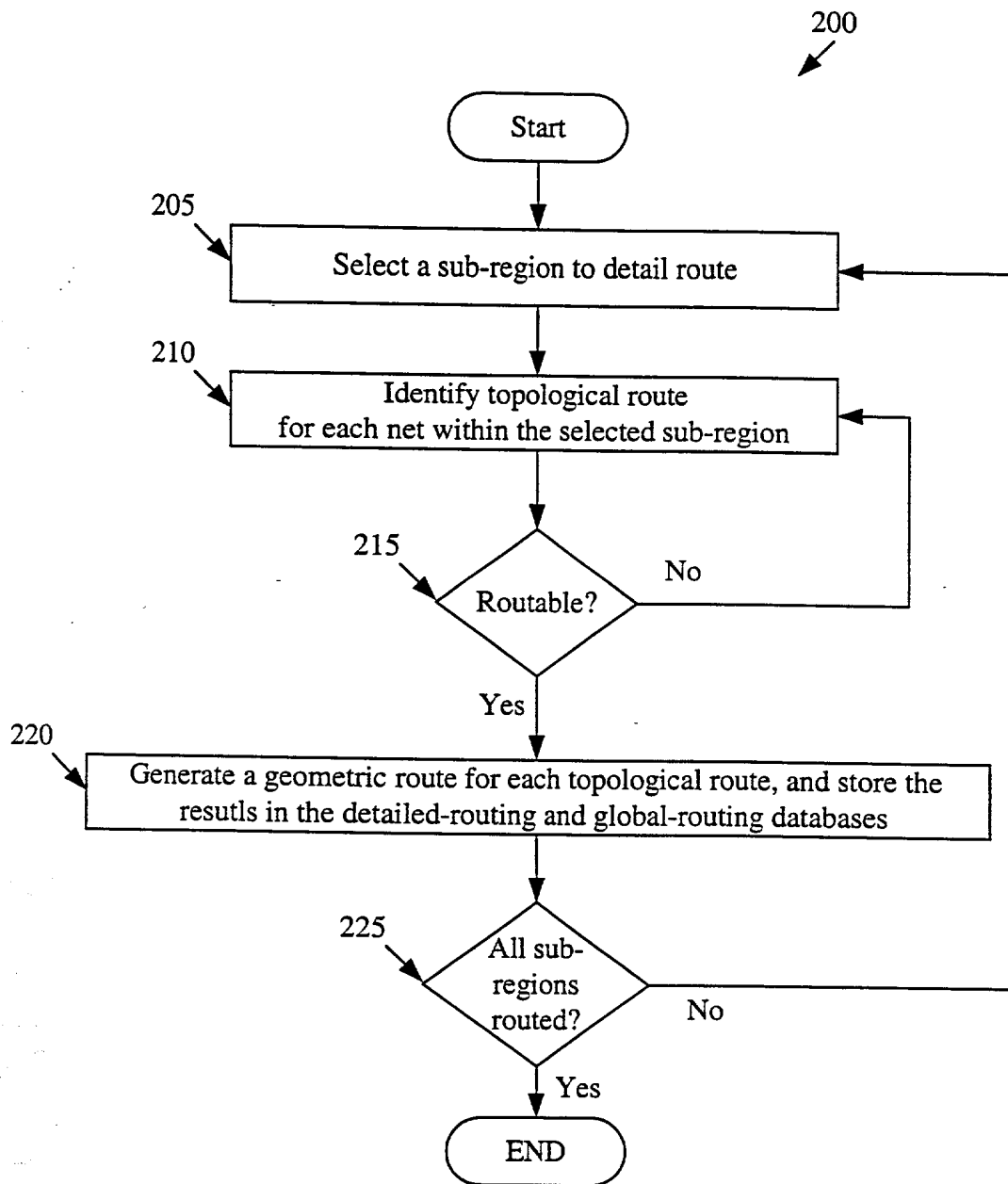


Figure 2

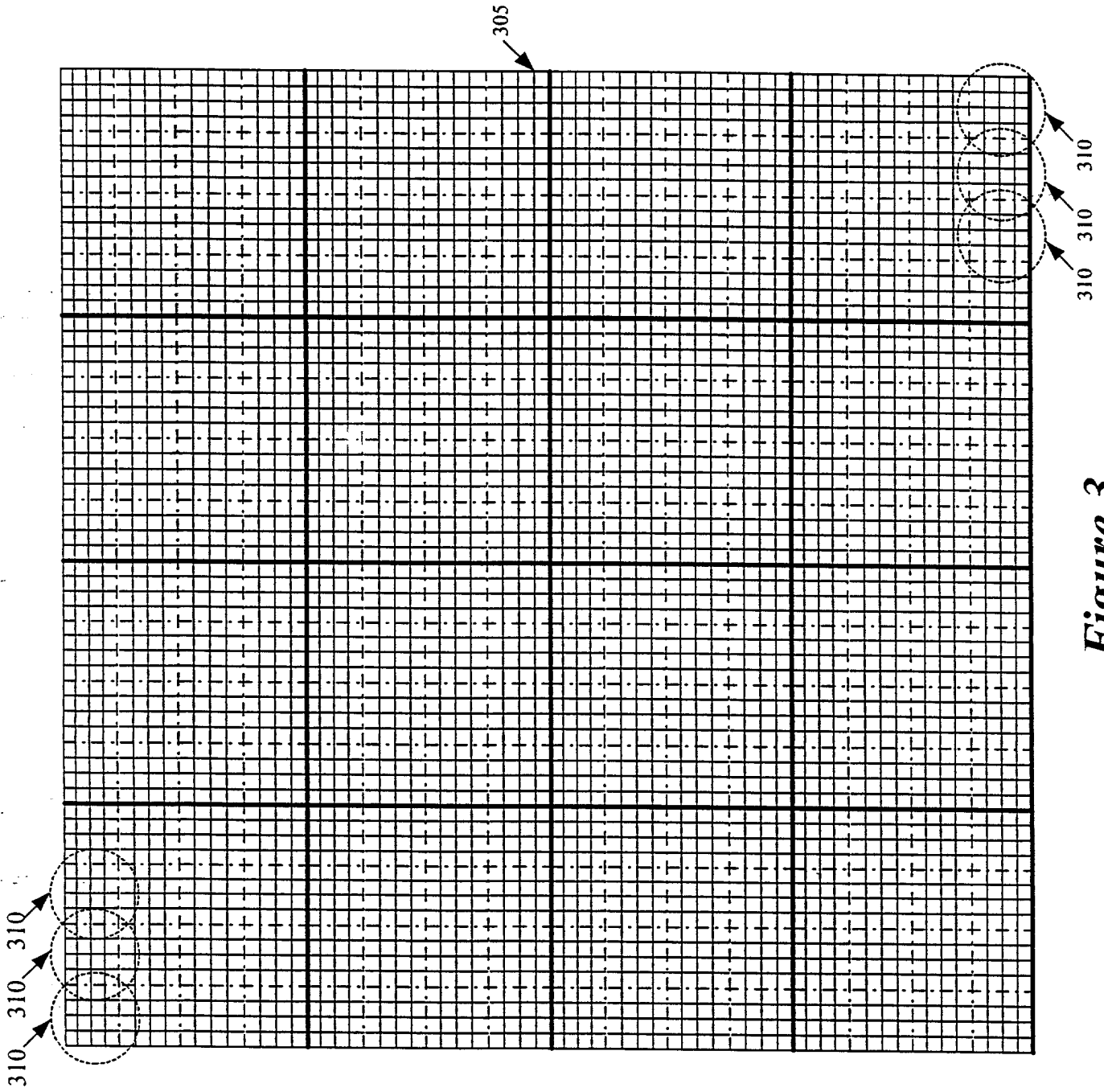


Figure 3

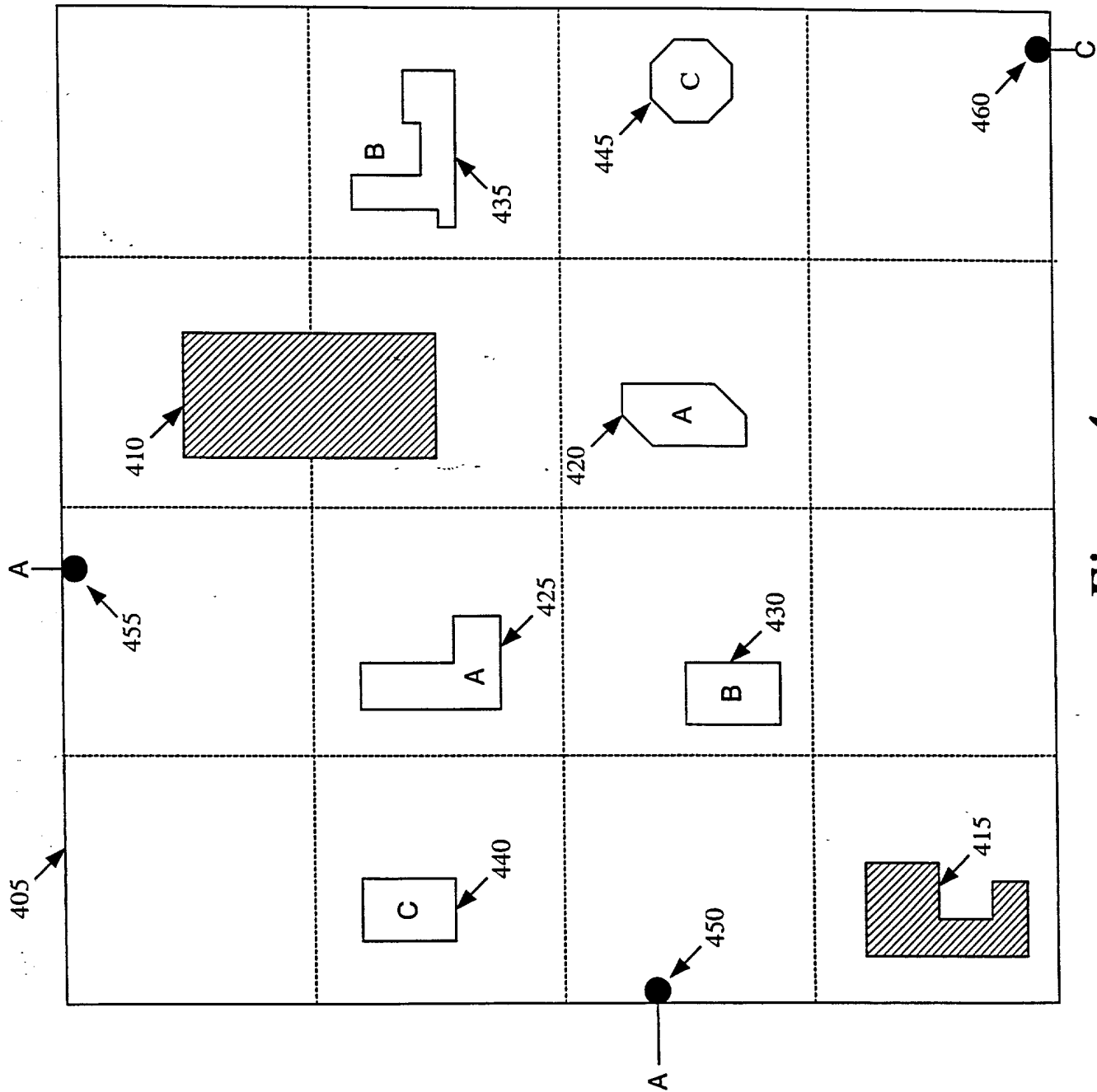


Figure 4

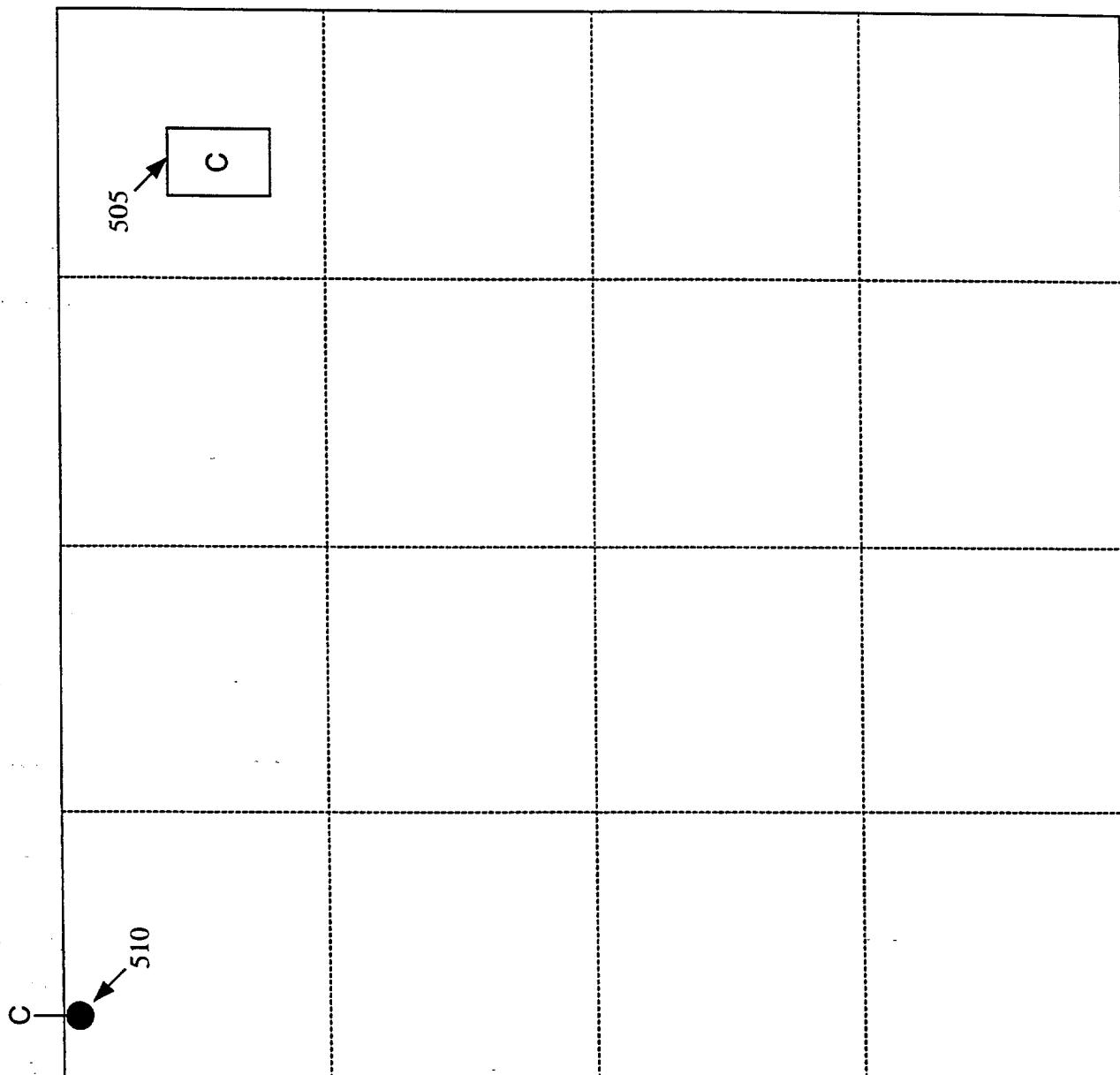


Figure 5

```
-List of Geometries
--Each Geometry including a sequence of points & layer assignment
-Bounding box of the region
-Array of layer properties
--Minimum wire size
--Minimum spacing
--Via sizes
--Cost/Unit
-Netlist specifying a number of nets
--Each net specifying a set of pins
--Each pin specifying a set of ports
--Each port specifying a set of geometries
```

Figure 6

```
-List of Geometries
--Each Geometry including a sequence of points & layer assignment
--List of connection nodes inside each pin geometry
-Bounding box of the region
-Array of layer properties
--Minimum wire size
--Minimum spacing
--Via sizes
--Cost/Unit
-Netlist specifying a number of nets
--Each net specifying a set of pins
--Each pin specifying a set of ports
--Each port specifying a set of geometries
-For each layer, a graph specifying
--Nodes
--Edges
--Faces
```

Figure 7

Face
<ul style="list-style-type: none"> -Reference to 3 edges -Reference to 3 nodes -Up to two references for up to two face item

800

Edge
<ul style="list-style-type: none"> -Two references for up to two faces of the edge -Capacity -Flow -Constrained -Linked list of items on the edge starting with one of the edge's nodes and ending with its other node

900

Figure 8

Figure 9

Node
<ul style="list-style-type: none"> -Net Identifier -One or more planar-path references to adjacent topological items in the same planar path -A pair of via-path references to up and down topological via items -A references to list of edges connected to the node -For each edge, an edge reference to the next or previous topological item on the edge -A reference to the geometry of the node -Vertex number identifying the vertex of the geometry -Location of the node

1000

Figure 10

Edge Item
<ul style="list-style-type: none"> -Reference to its edge -Net Identifier -A pair of planar-path references to adjacent topological items in the same planar path -A pair of edge references to the next and previous topological item on the edge

1100

Figure 11

Face Item
<ul style="list-style-type: none"> -Reference to its face -Net Identifier -Up to 3 planar-path references for adjacent topological items in the same planar path -A pair of via-path references for up and down topological via items -Bounding polygon that defines legal face item locations -Constraining Points and Distances

1200

Figure 12

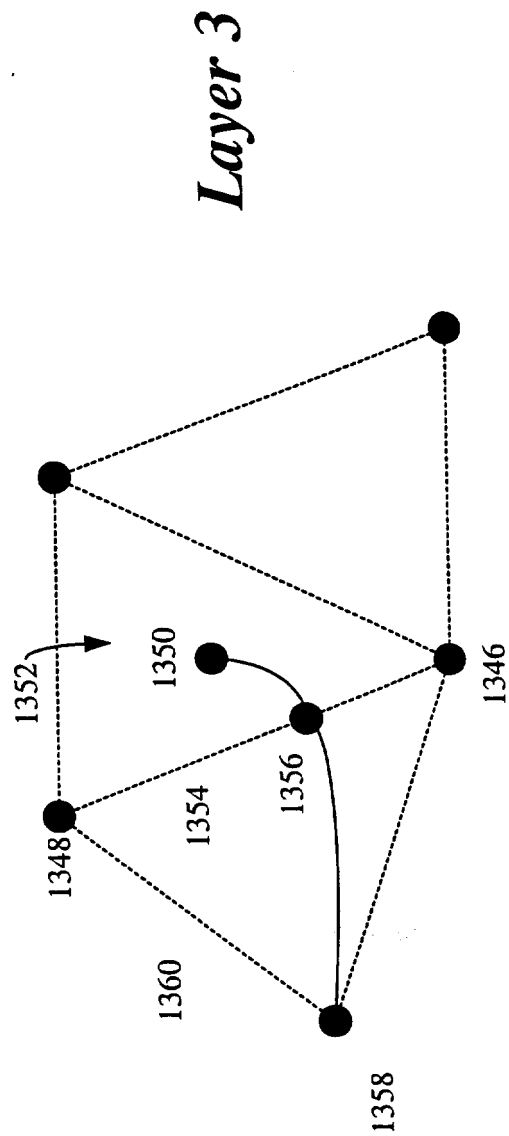
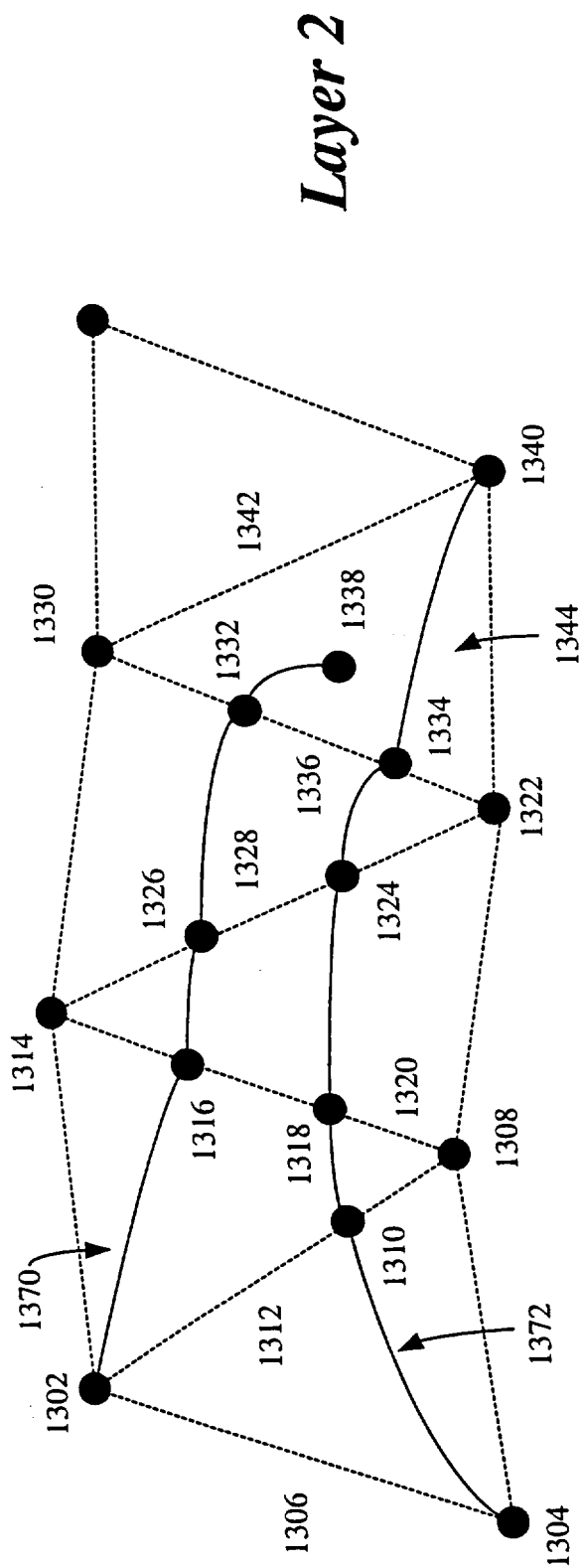


Figure 13

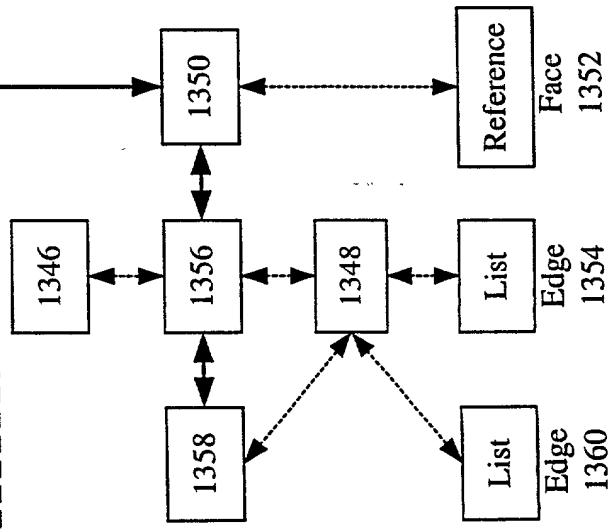
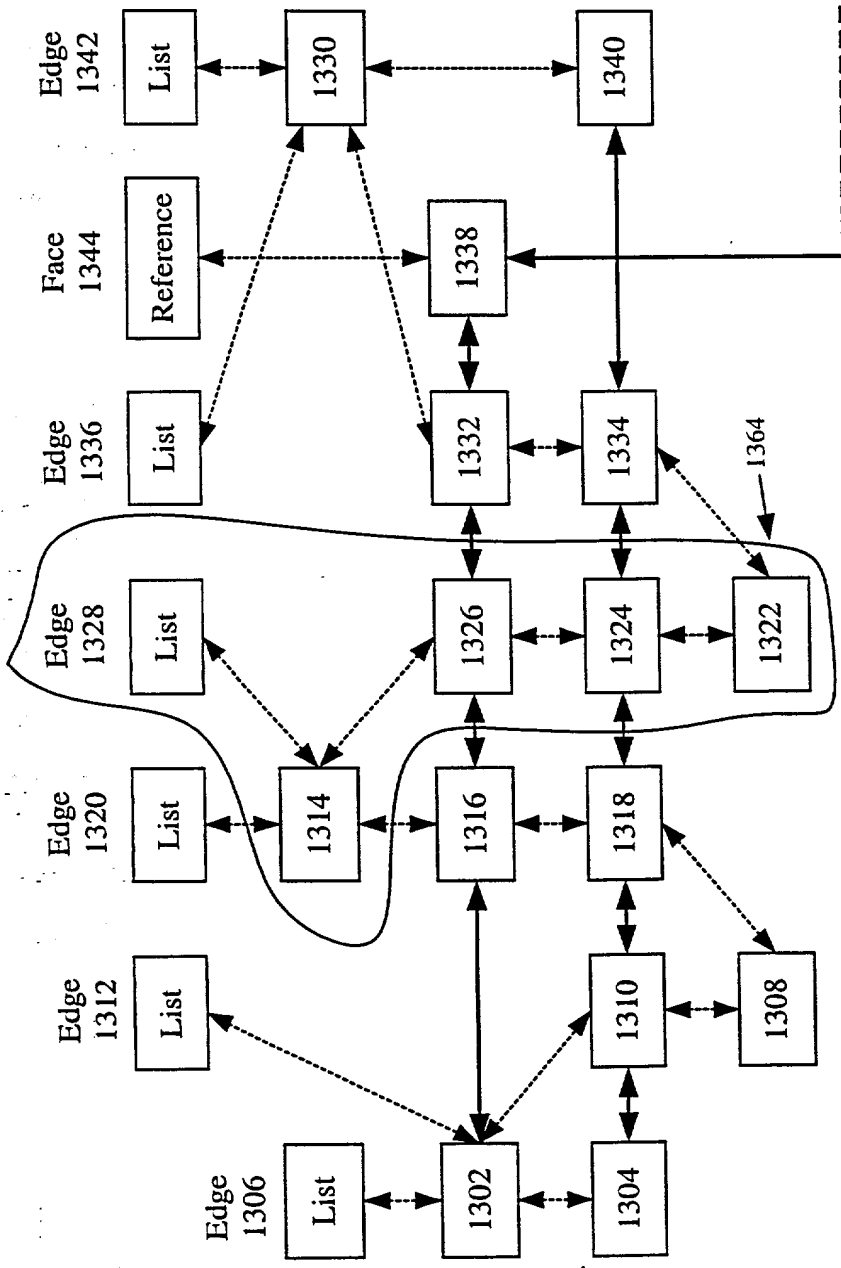


Figure 14

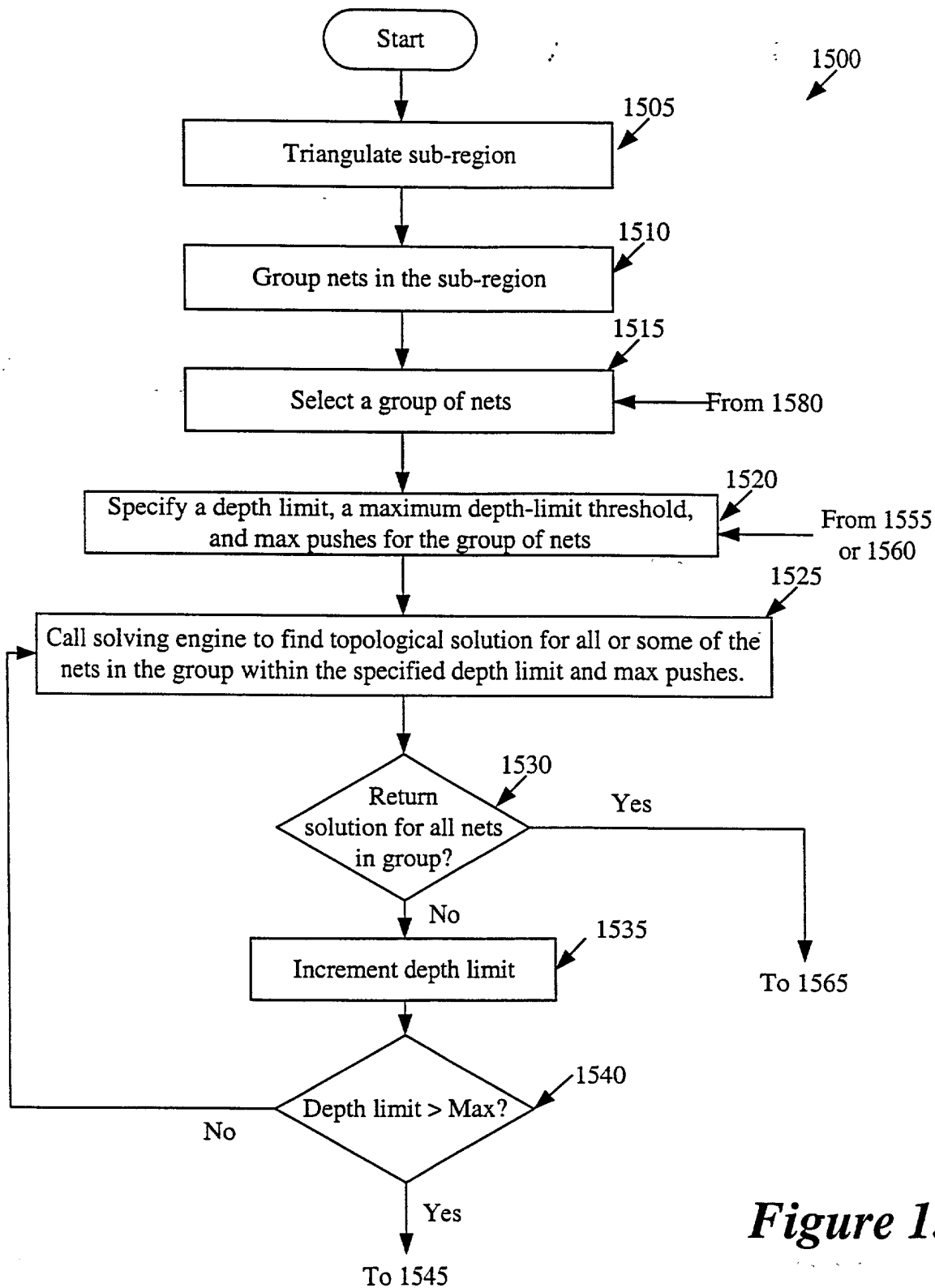


Figure 15A

Figure 15: Figure 15A
Figure 15B

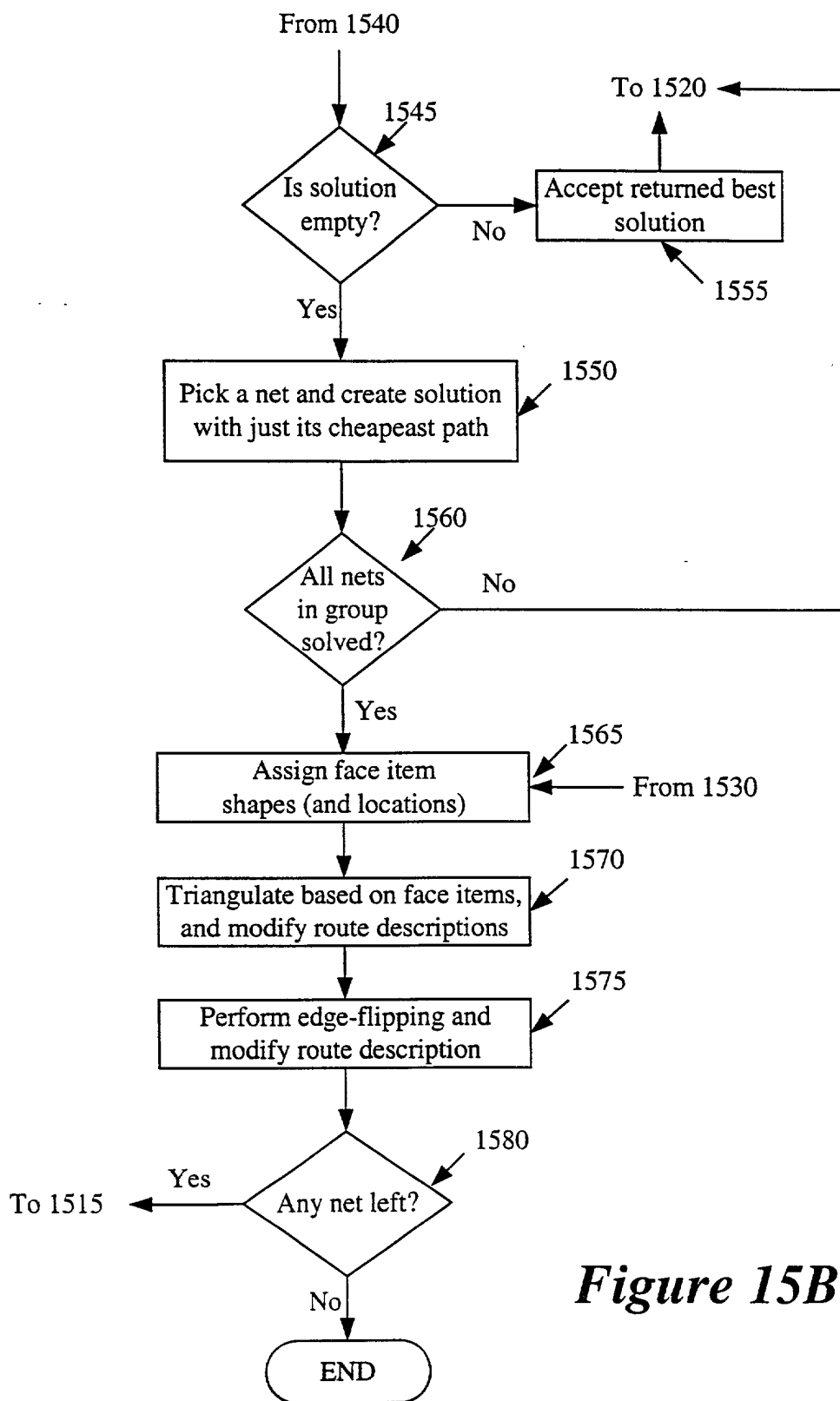


Figure 15B

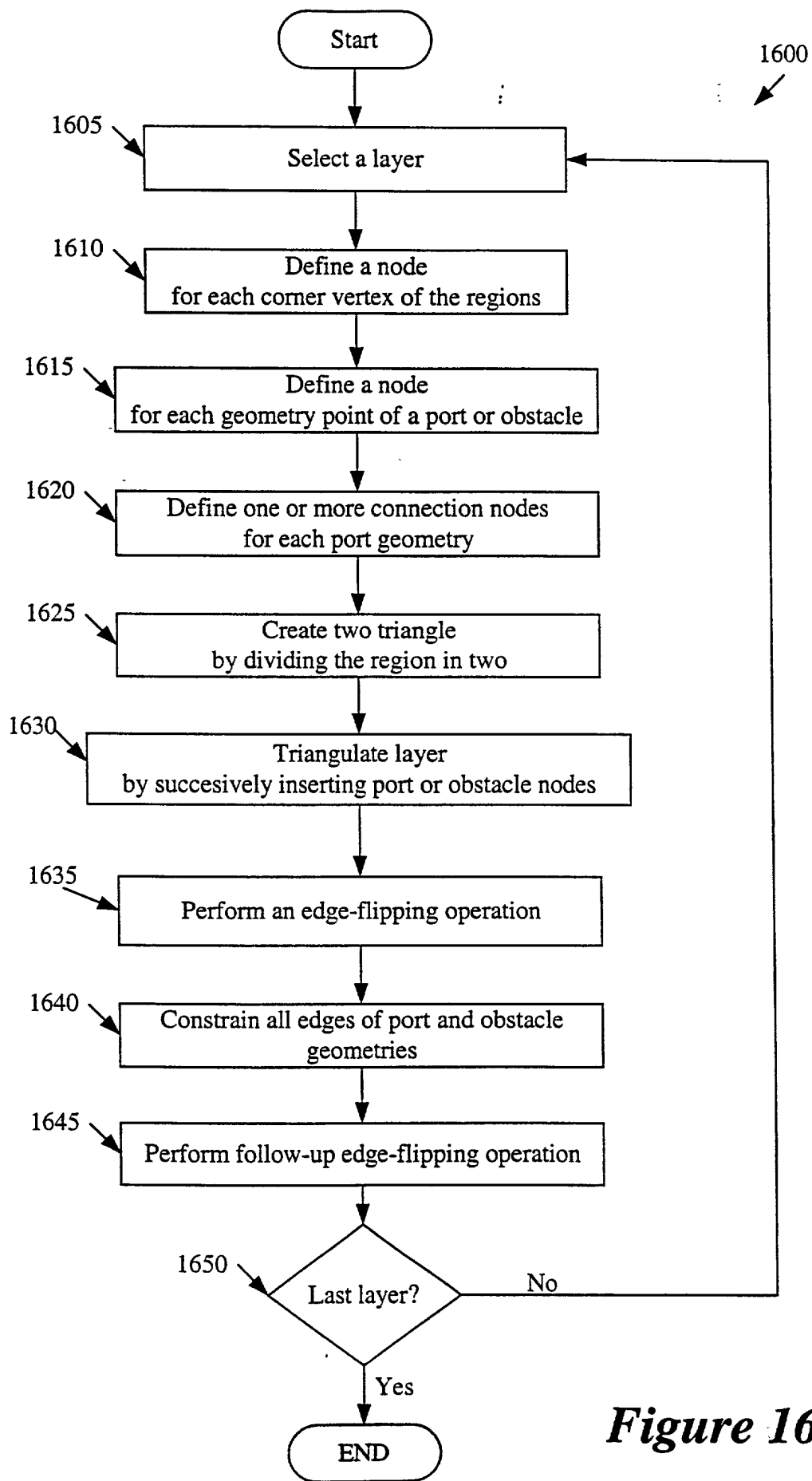


Figure 16

201500T 201500T

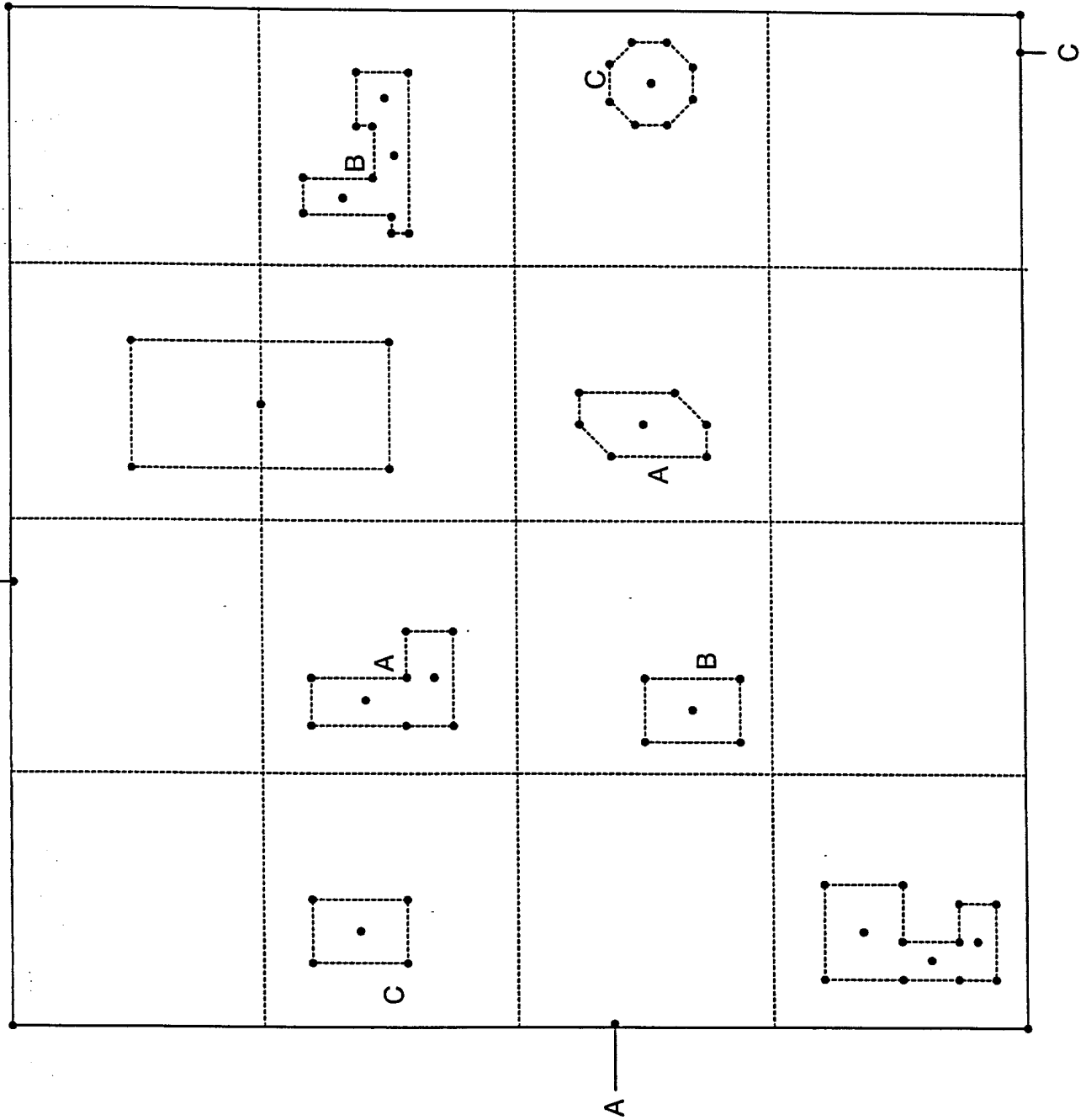


Figure 17

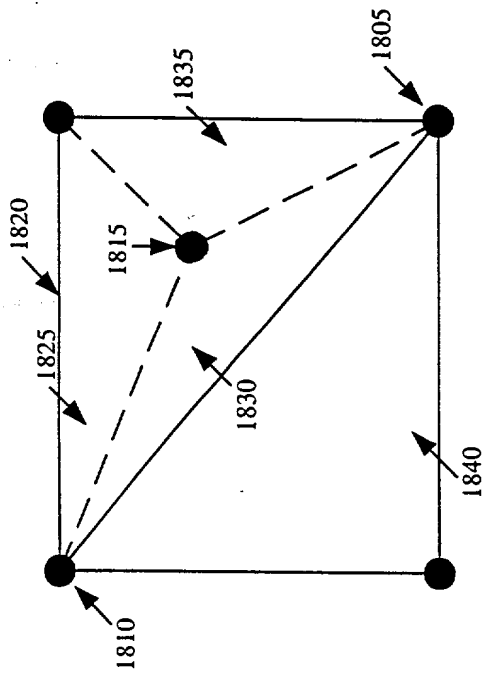


Figure 18

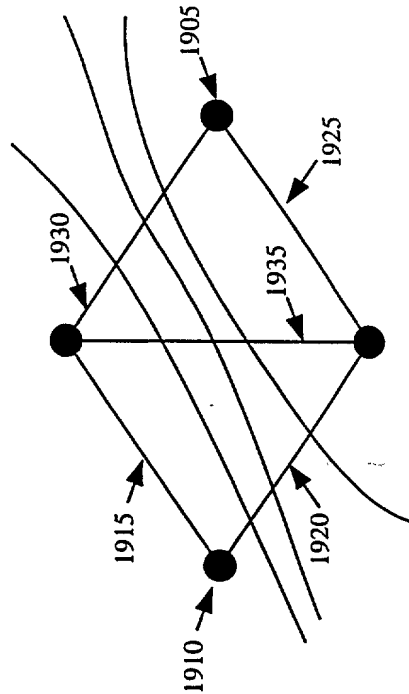


Figure 19

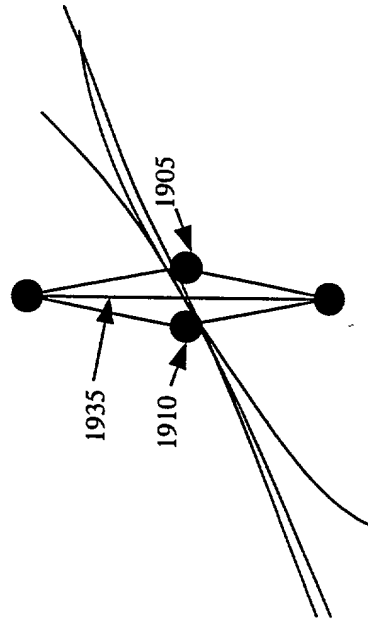


Figure 20

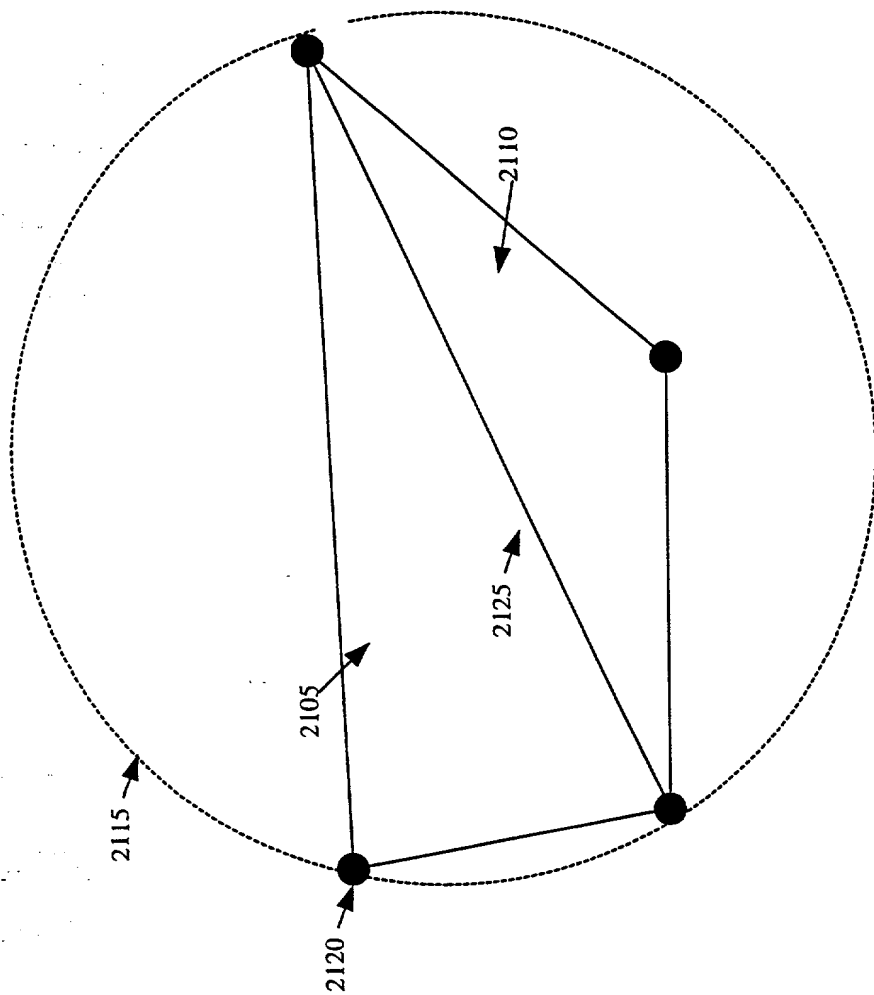


Figure 21

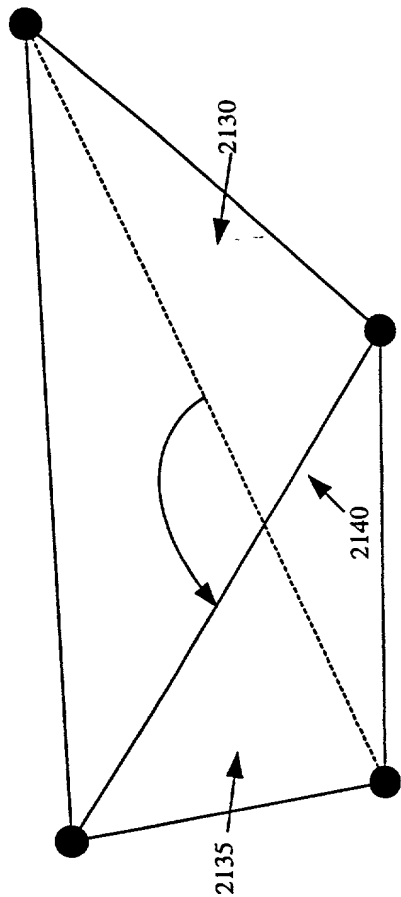


Figure 22

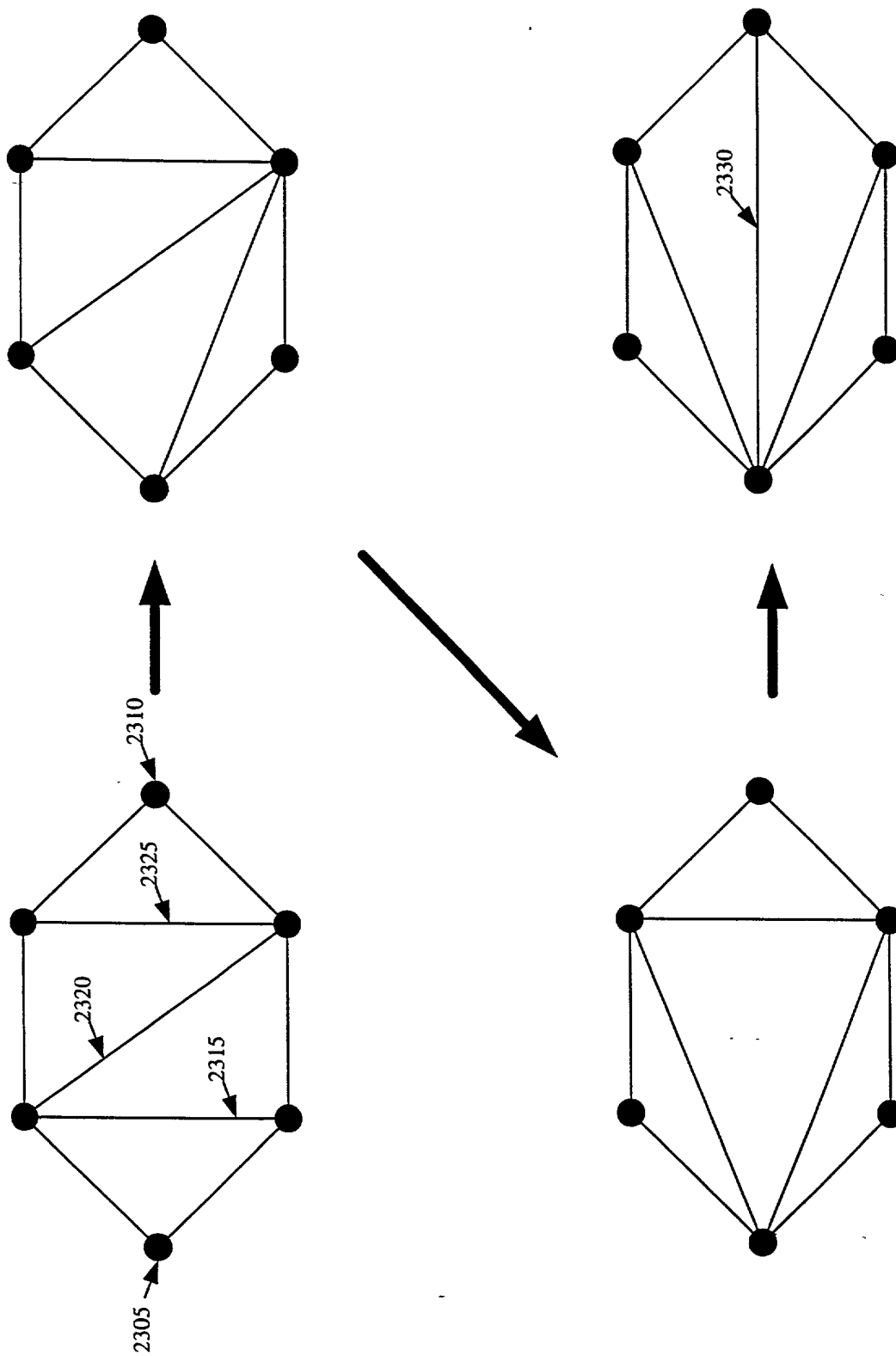


Figure 23

2016-10-20 15:00

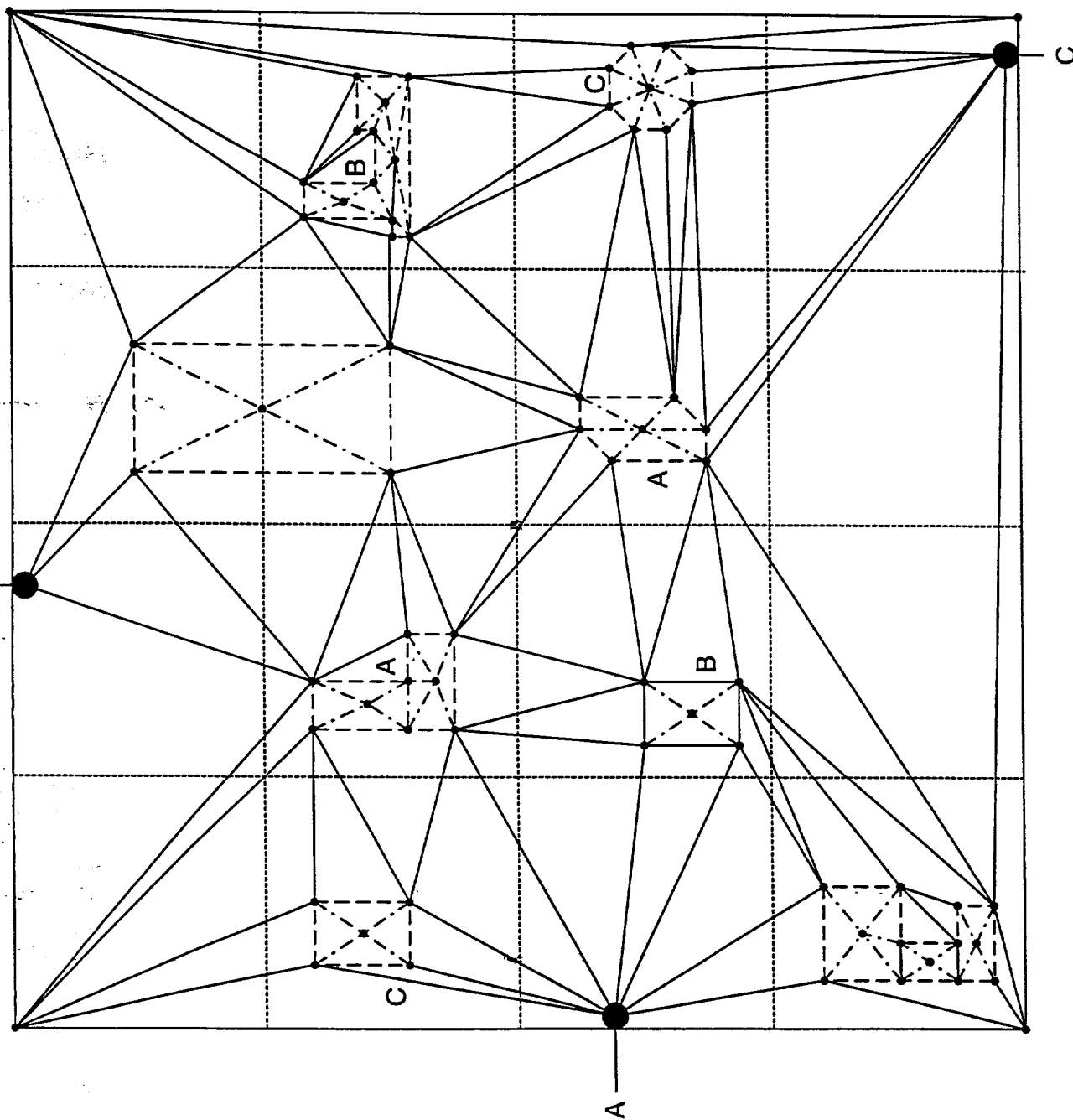


Figure 24

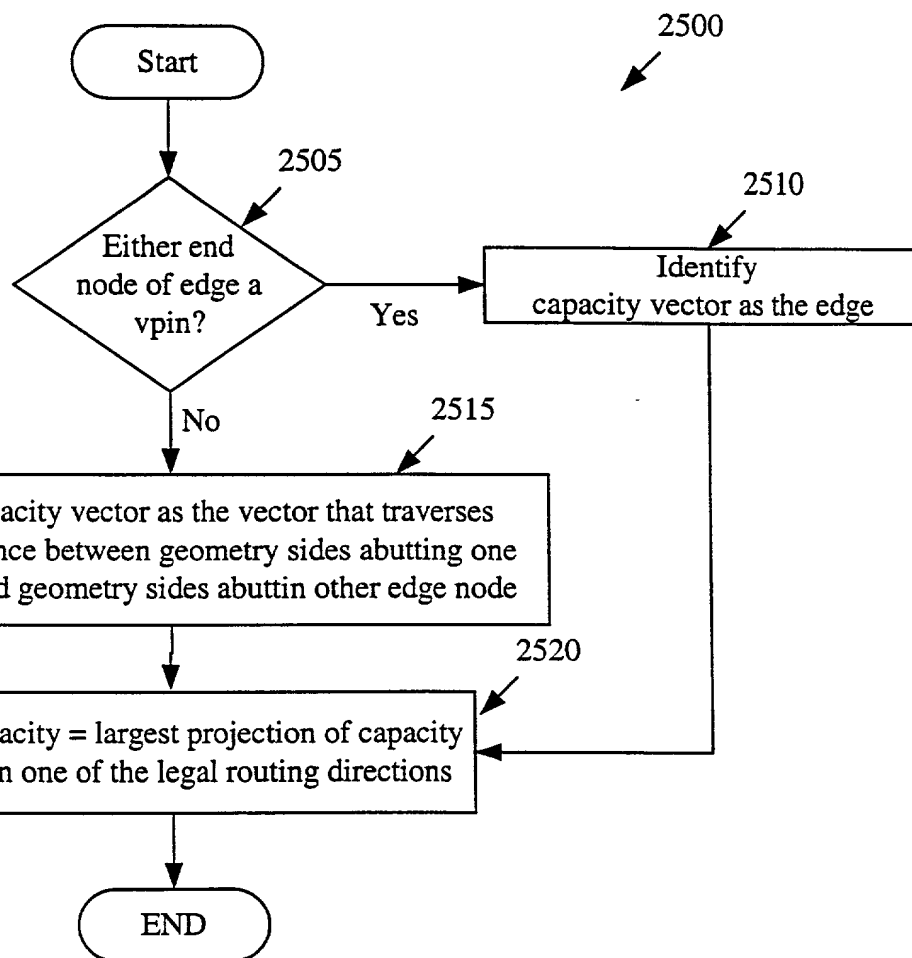


Figure 25

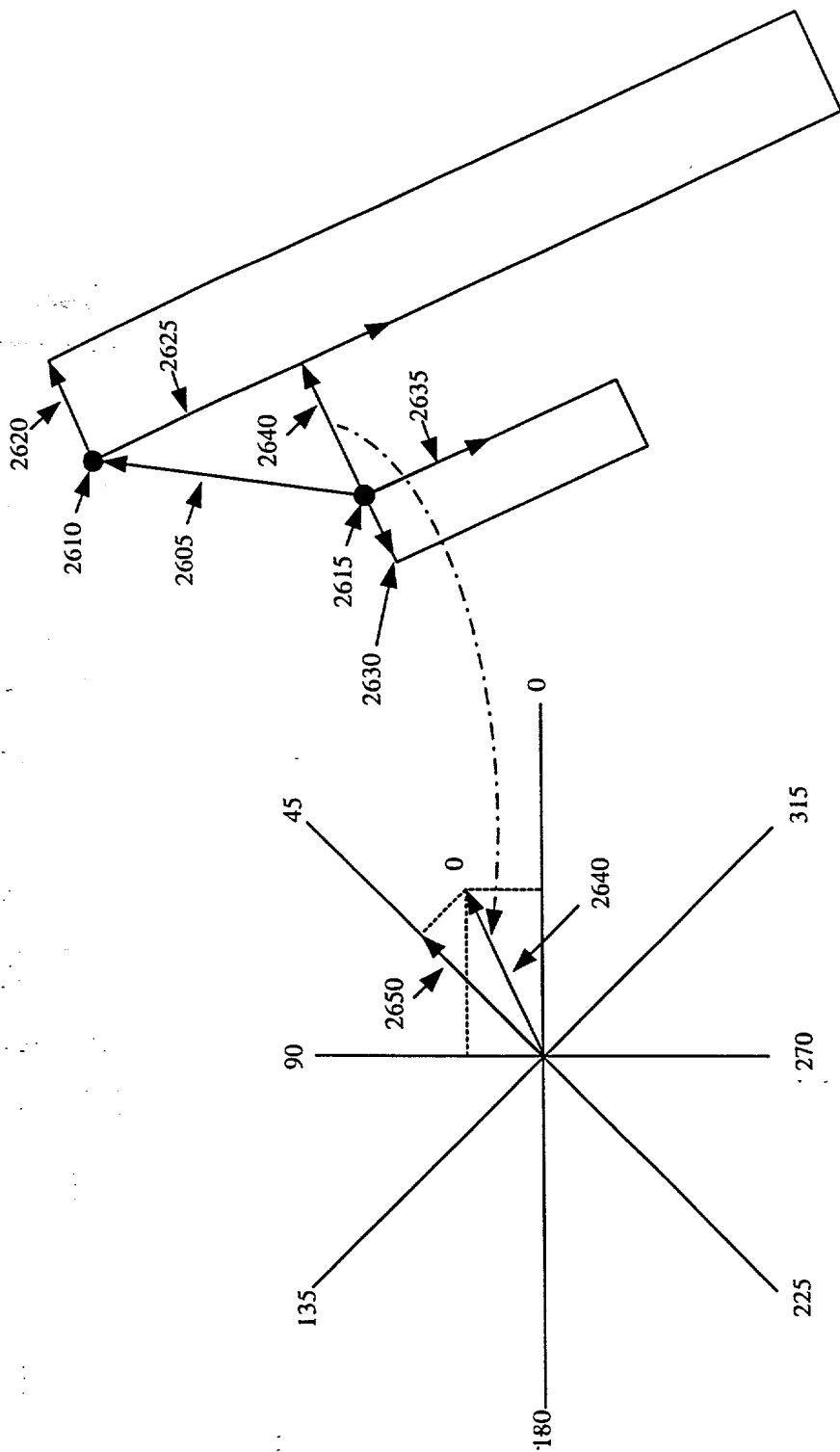


Figure 26

Topological Routes for Net 3

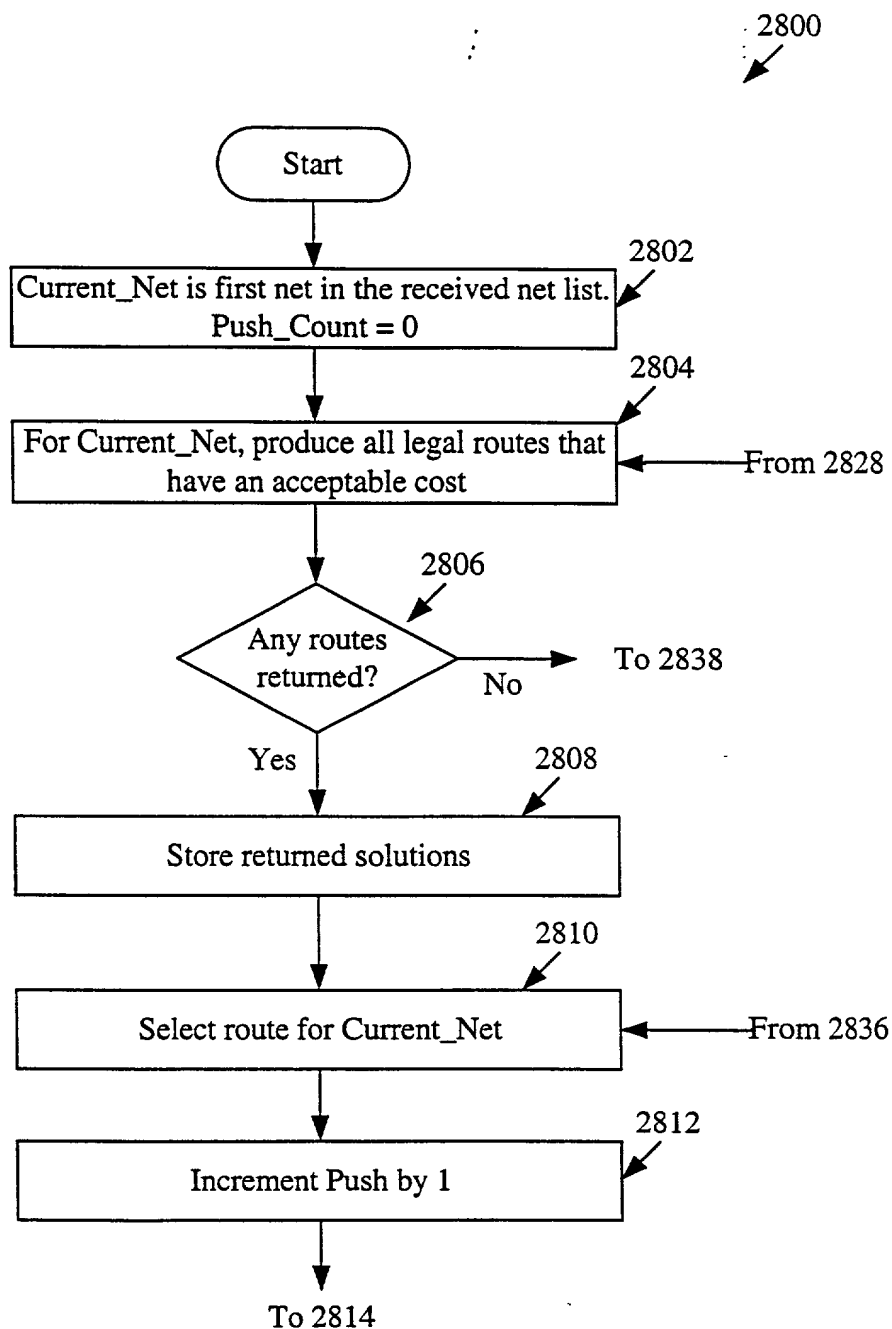


Figure 28A

Figure 28: Figure 28A
Figure 28B
Figure 28C

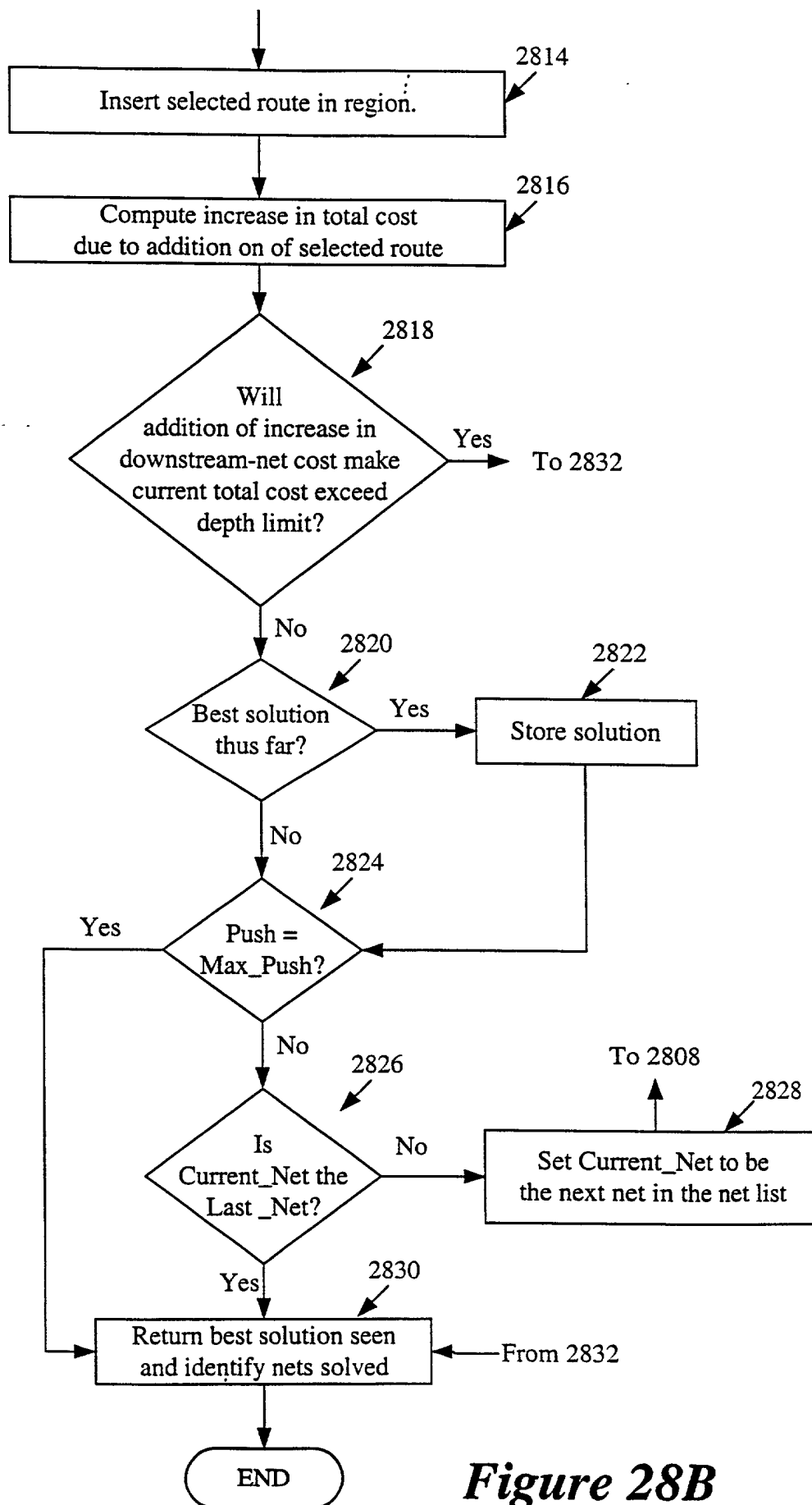


Figure 28B

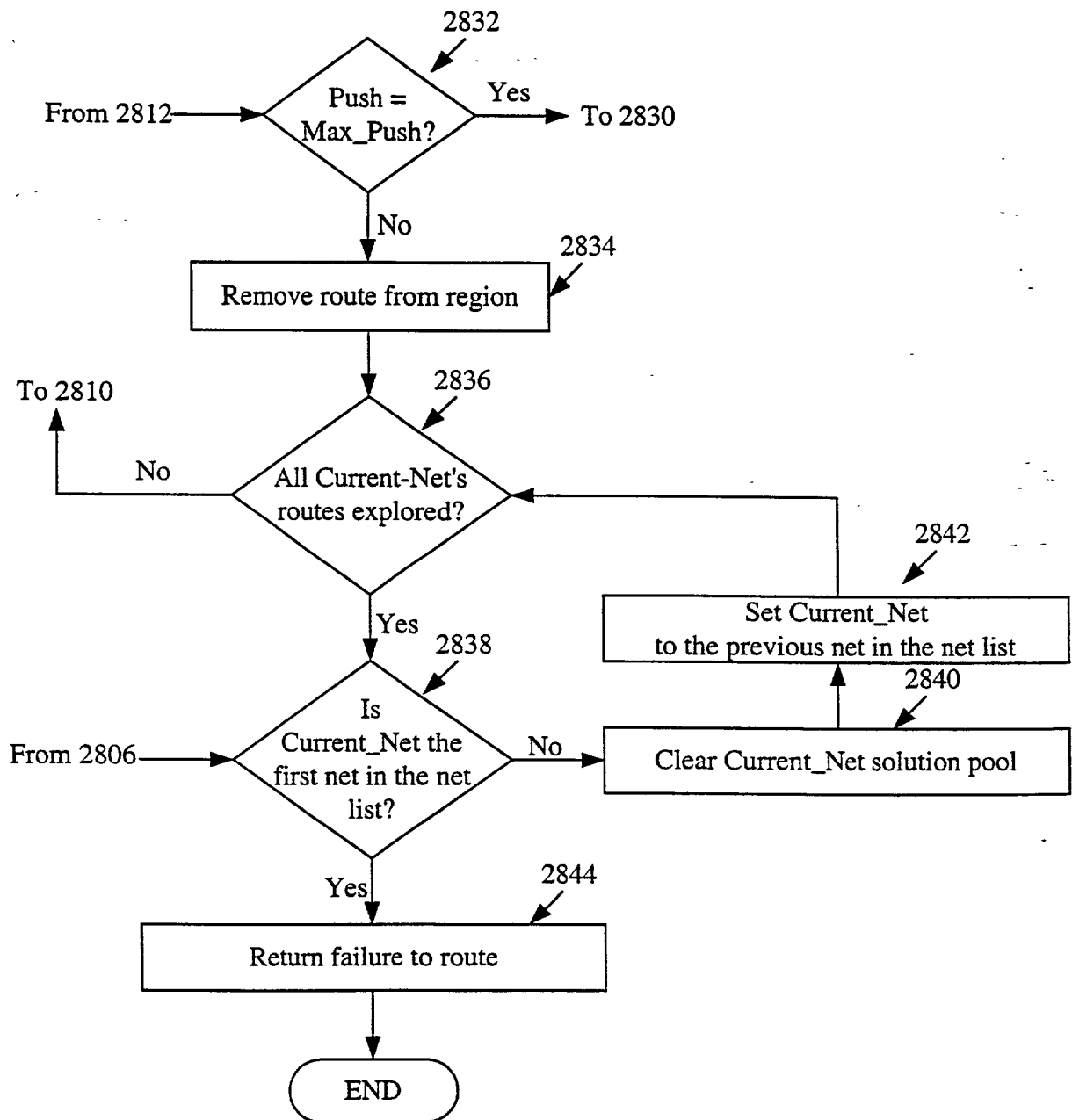


Figure 28C

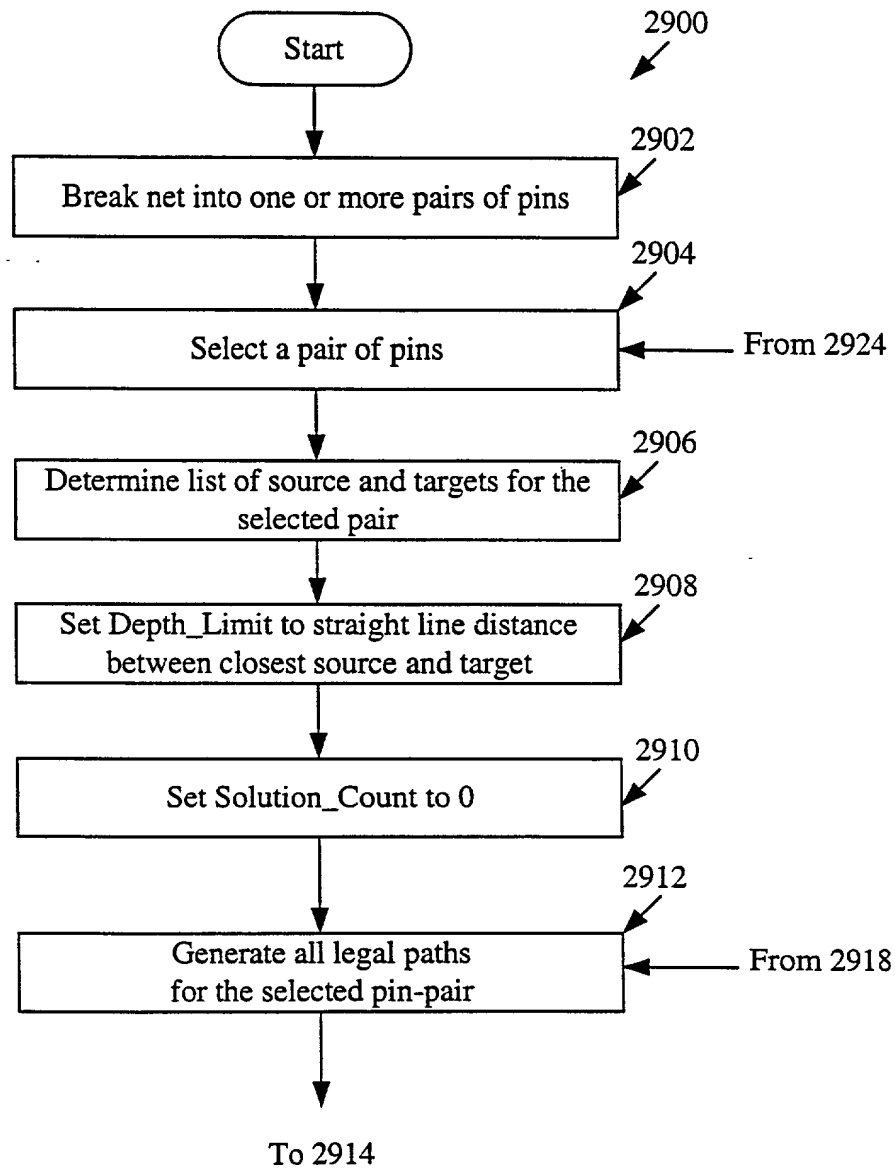


Figure 29A

Figure 29: $\frac{\text{Figure 29A}}{\text{Figure 29B}}$

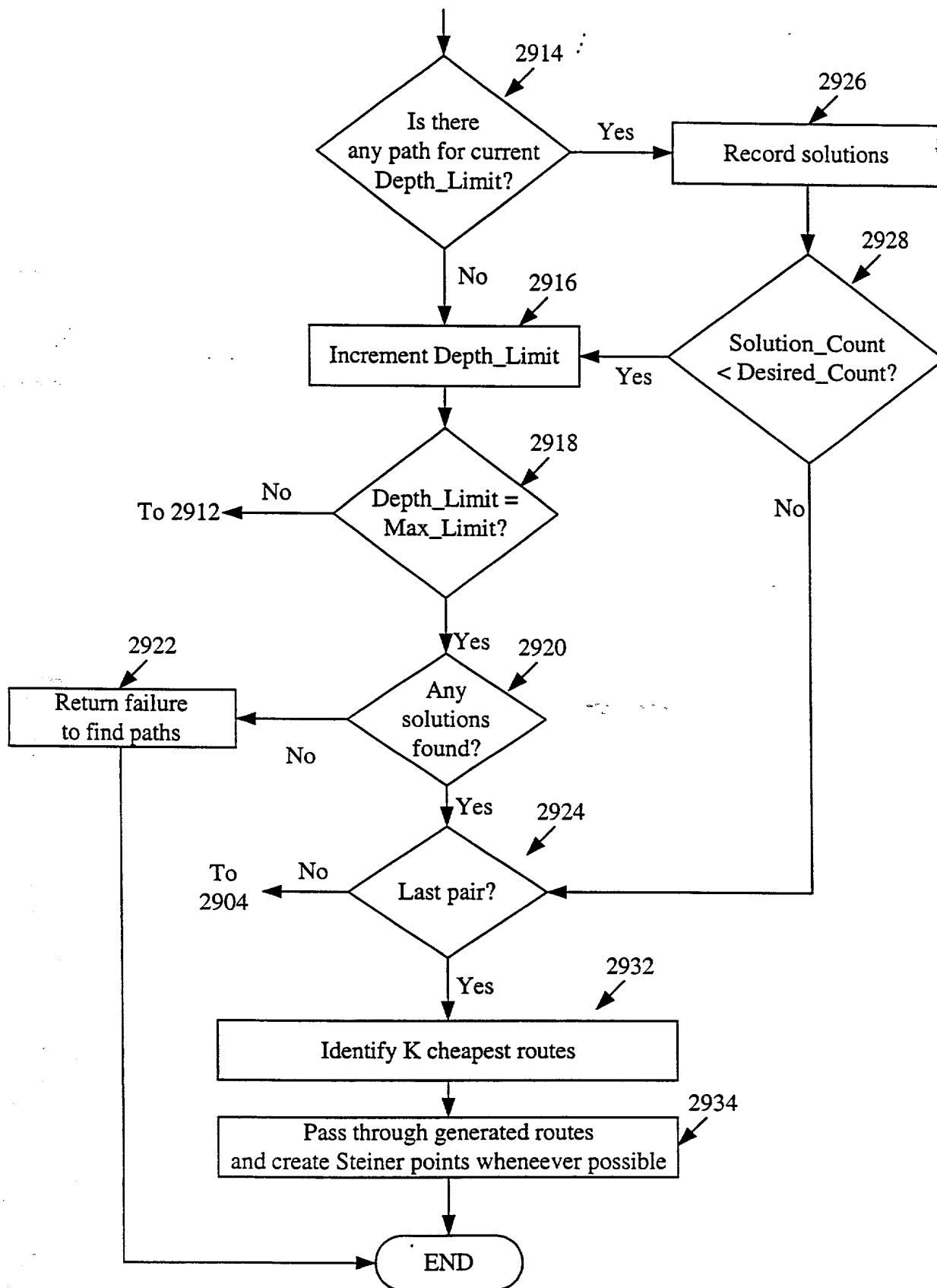


Figure 29B

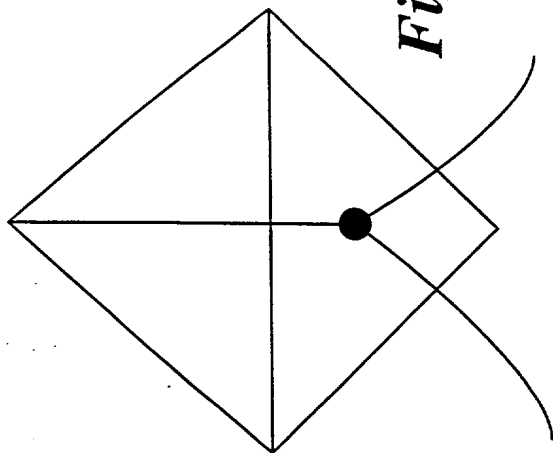
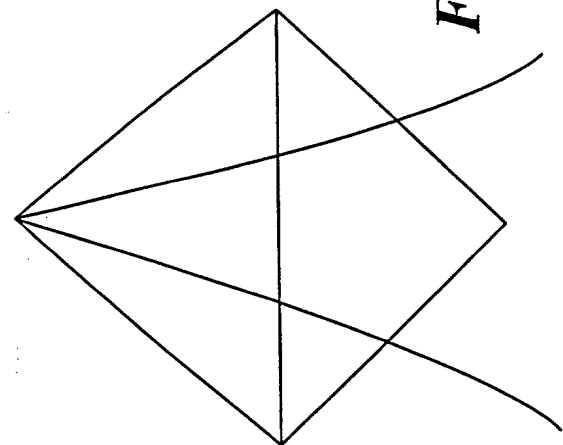


Figure 30B

Figure 30A

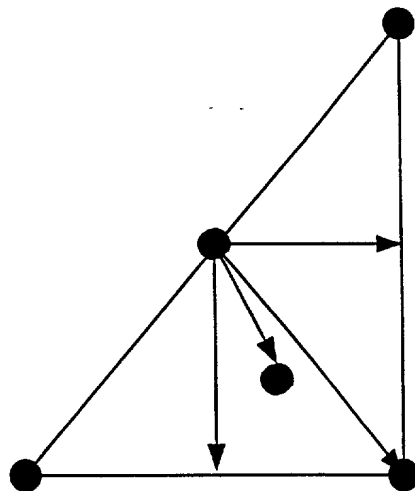


Figure 32

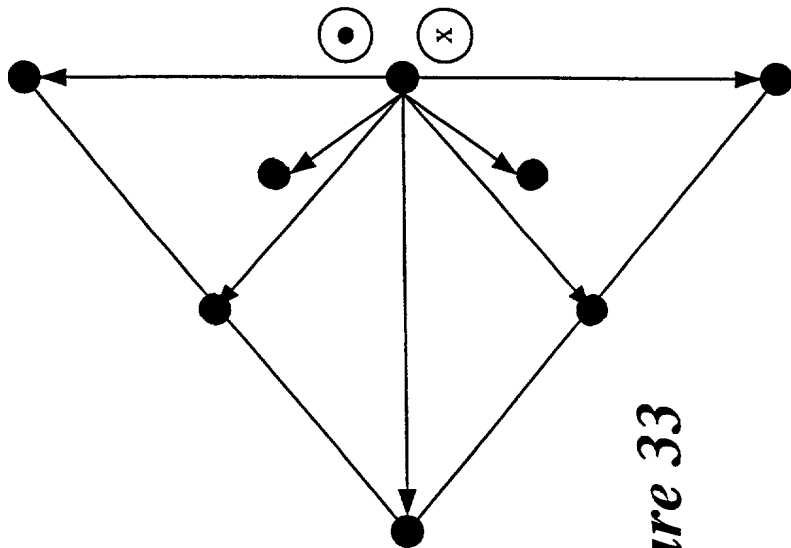


Figure 33

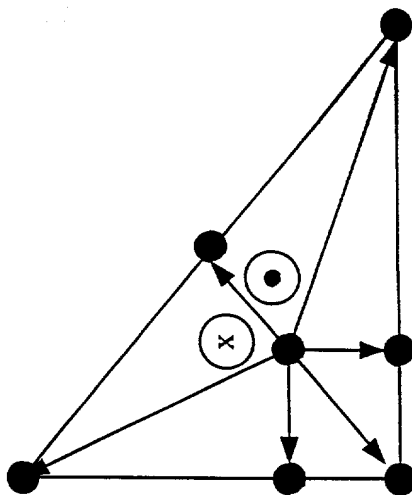


Figure 34

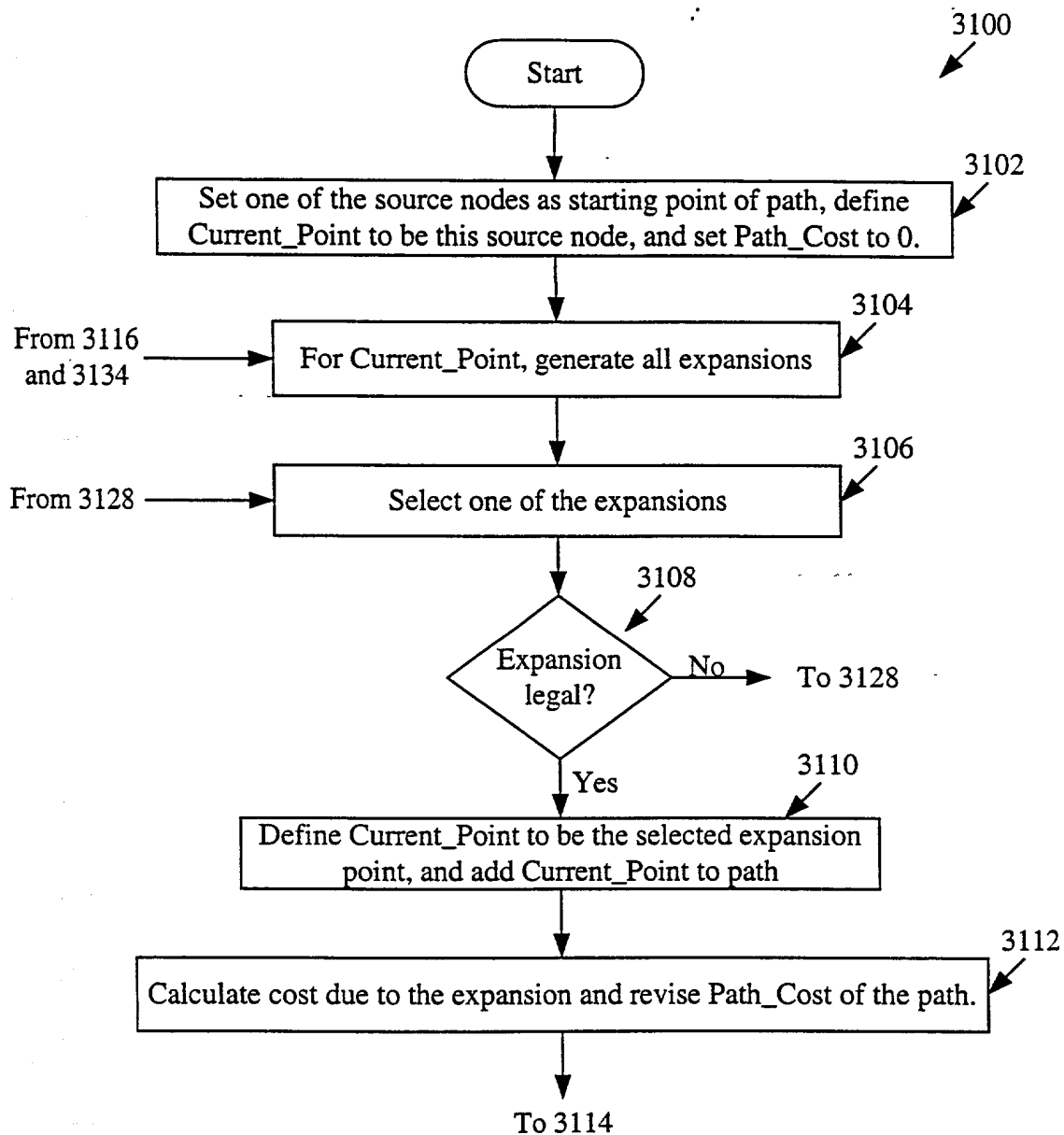


Figure 31A

Figure 31: $\frac{\text{Figure 31A}}{\text{Figure 31B}}$

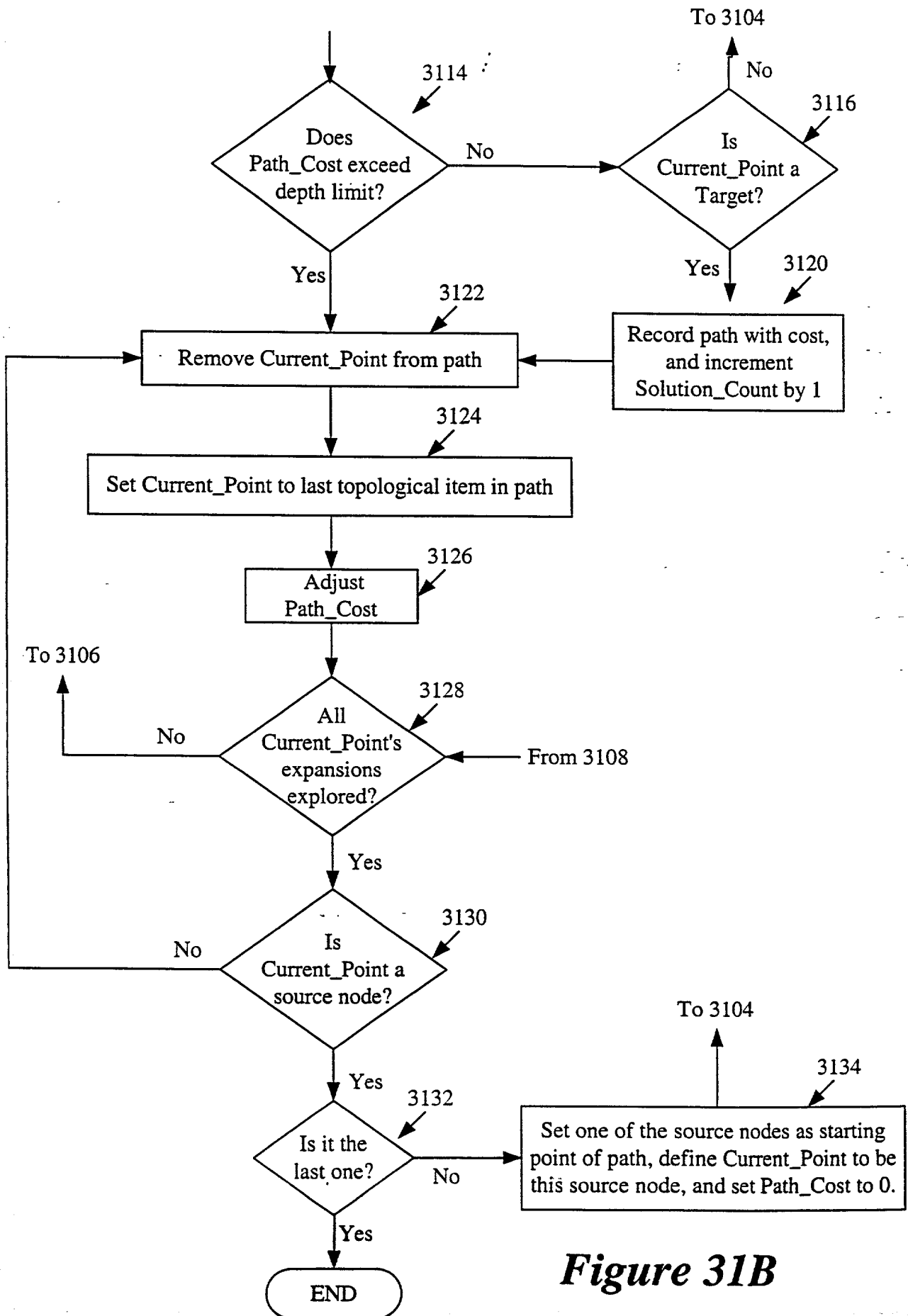


Figure 31B

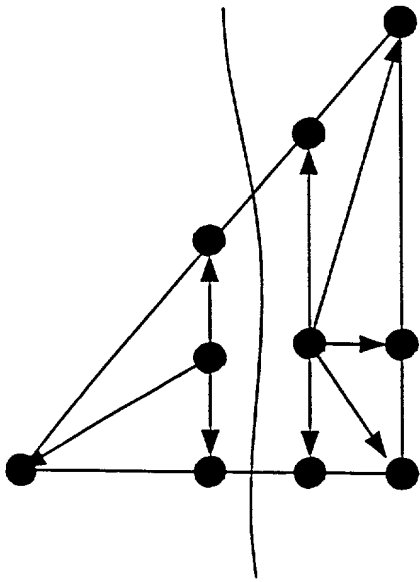


Figure 35

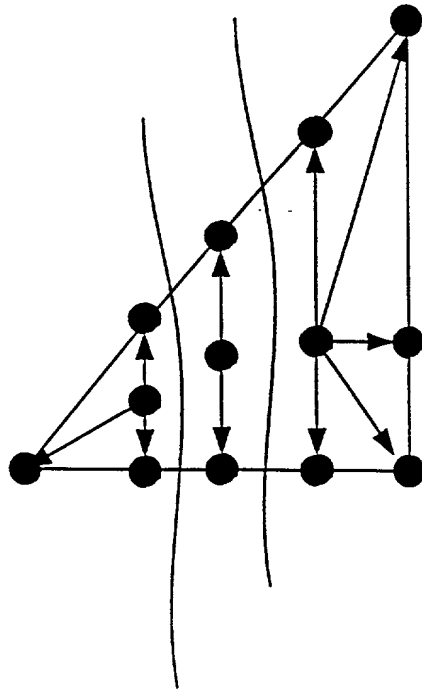


Figure 36

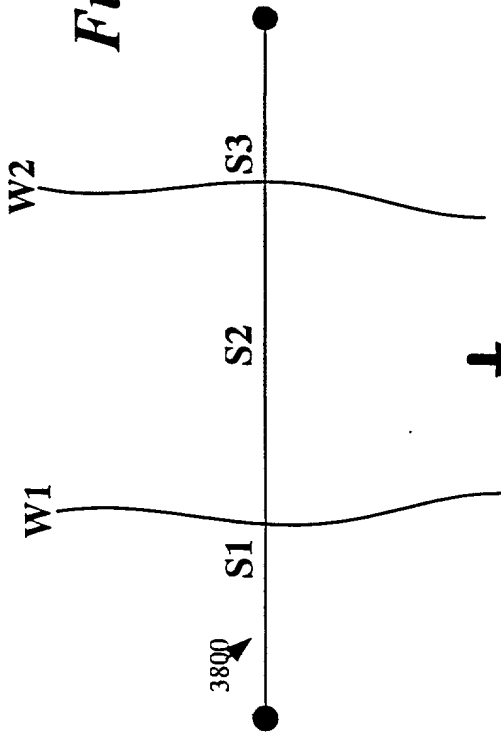


Figure 38A

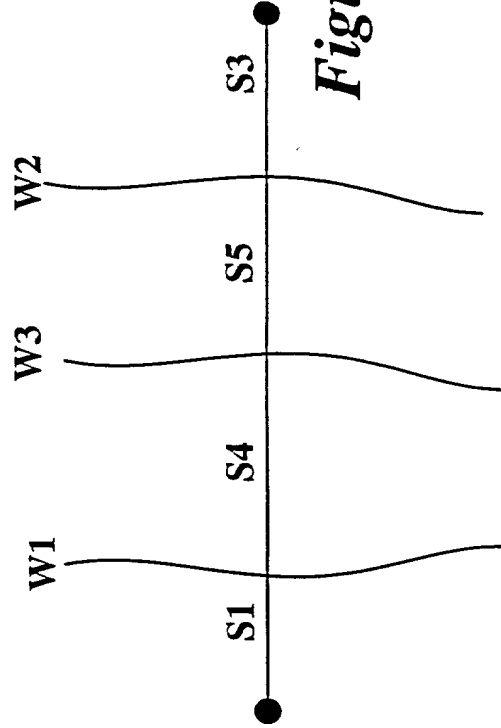


Figure 38B

To: From:		Node	Face Item	Edge Item
Node	Node	<ul style="list-style-type: none">• Planarity• Vias	<ul style="list-style-type: none">• Vias	<ul style="list-style-type: none">• Planarity• Vias• Edge• Capacity
	Face Item	<ul style="list-style-type: none">• Vias	<ul style="list-style-type: none">• Vias	<ul style="list-style-type: none">• Vias• Edge• Capacity
	Edge Item	<ul style="list-style-type: none">• Planarity• Vias	<ul style="list-style-type: none">• Vias	<ul style="list-style-type: none">• Planarity• Vias• Edge• Capacity

Figure 37

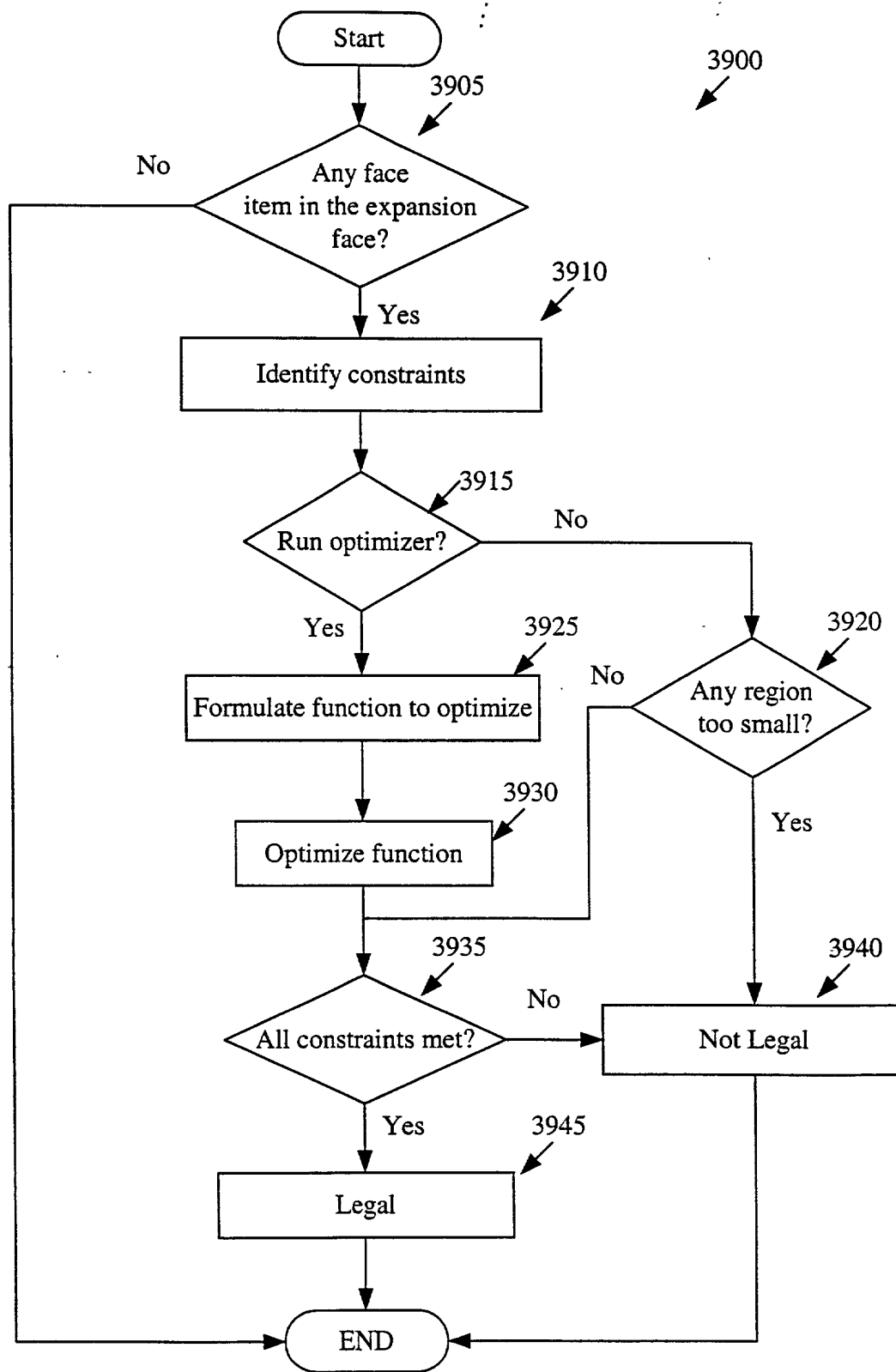


Figure 39A

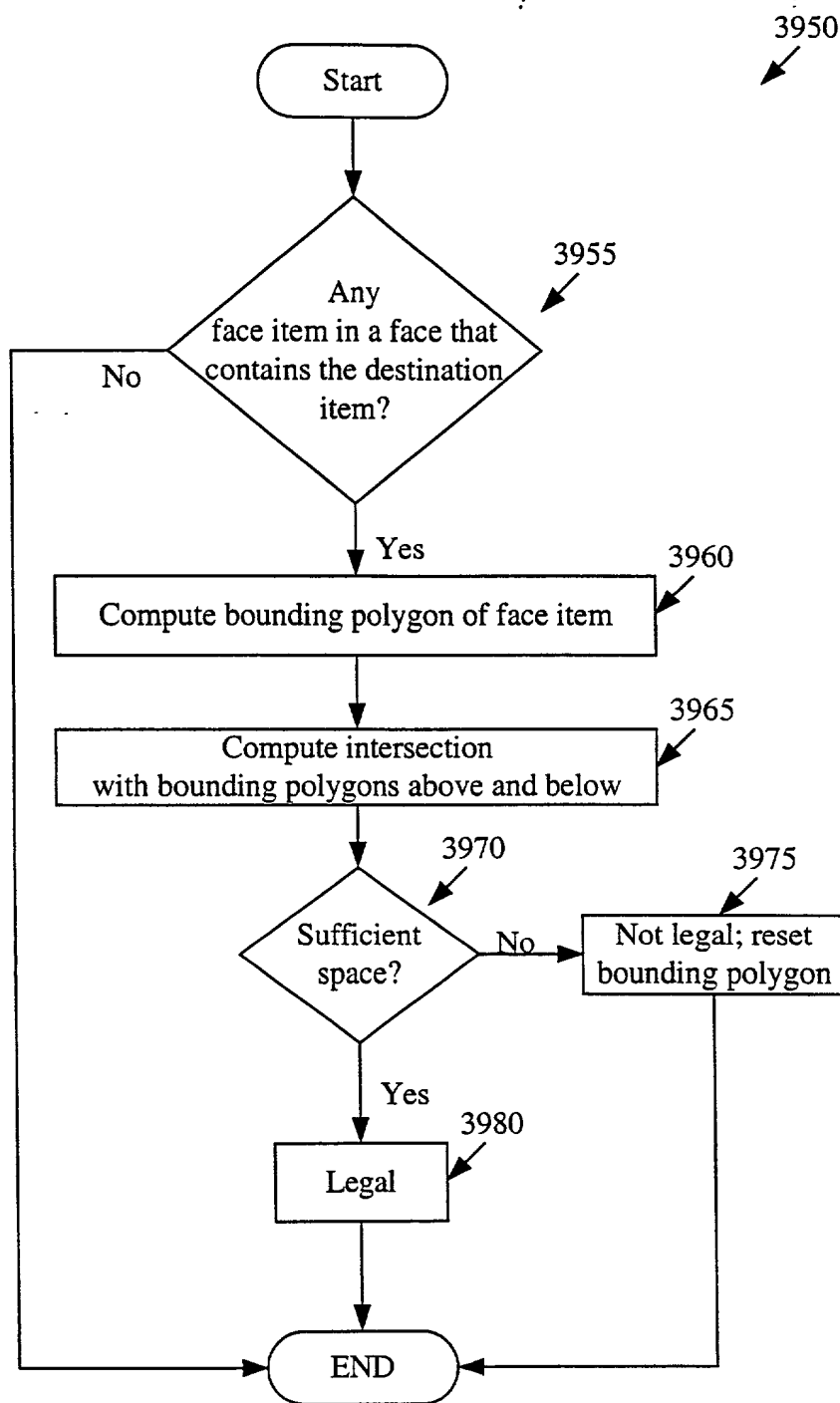


Figure 39B

201510-013102

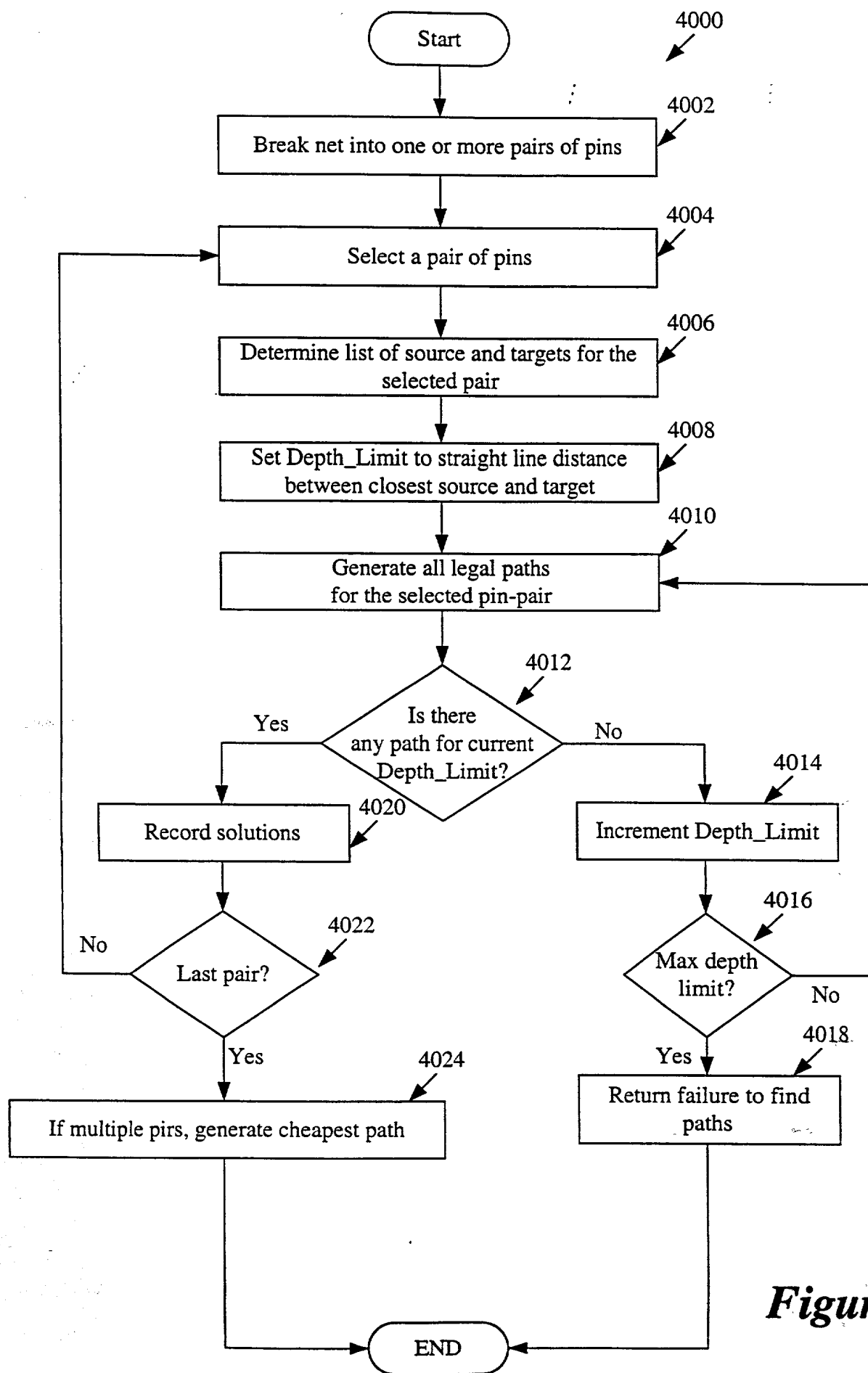


Figure 40

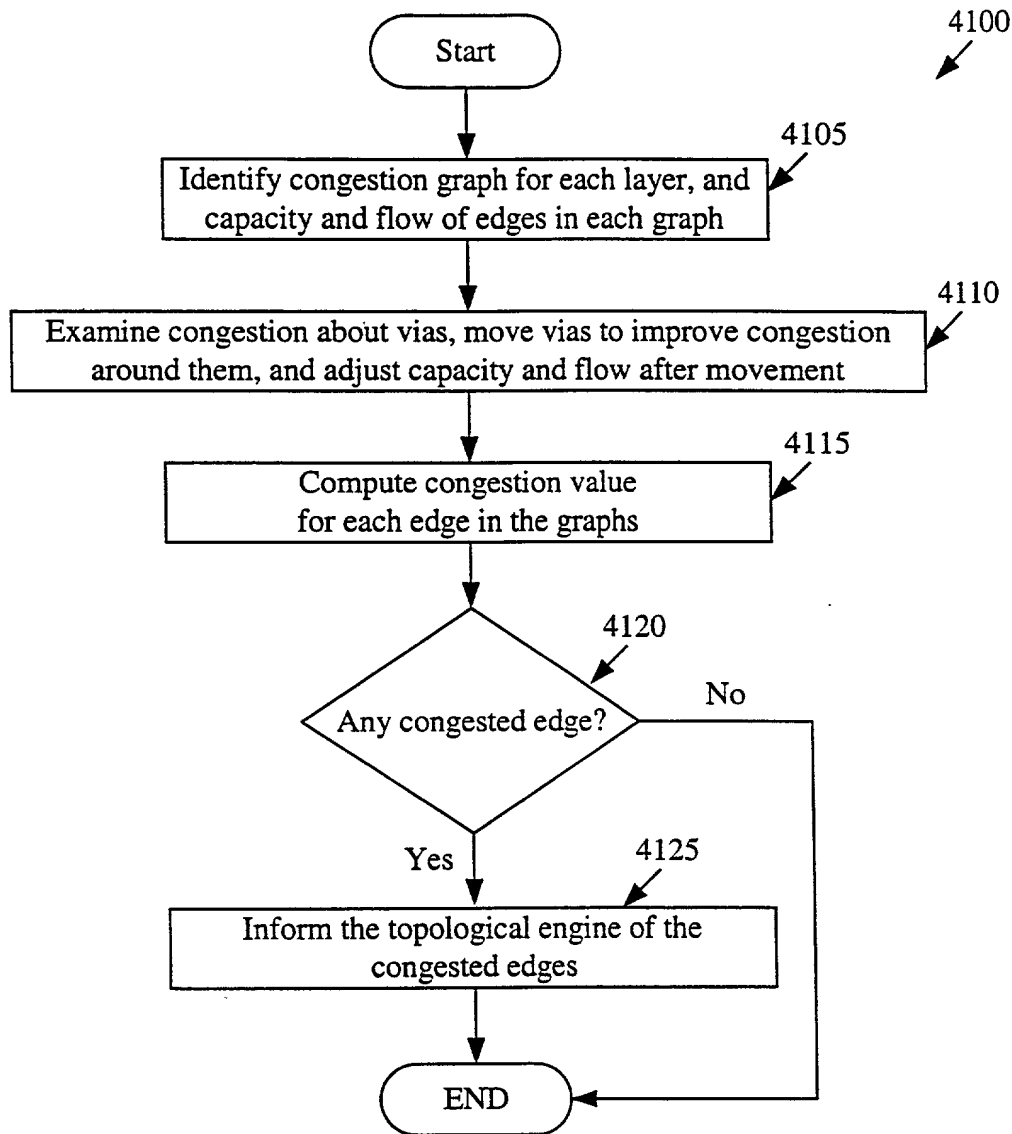


Figure 41

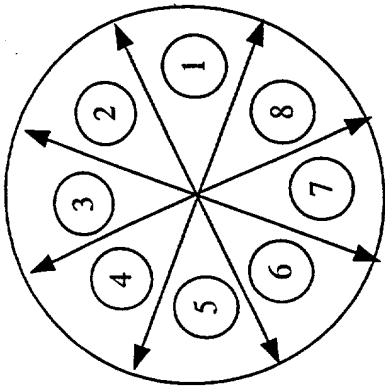


Figure 42

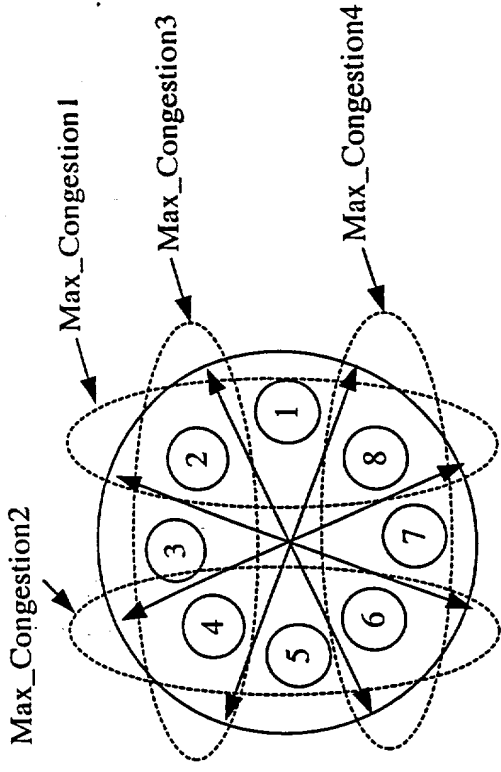


Figure 44

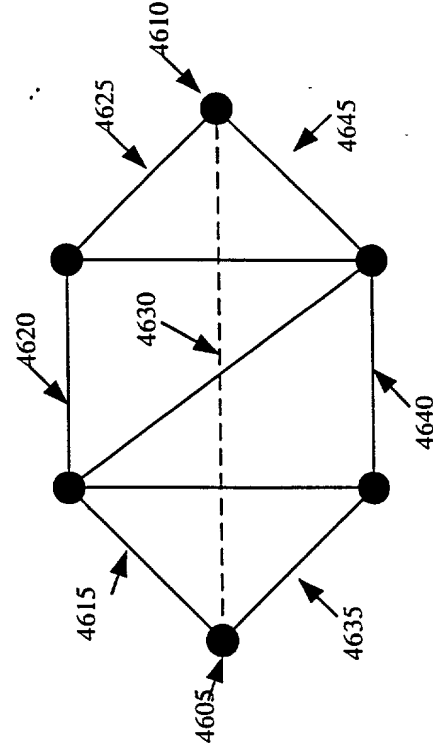


Figure 46

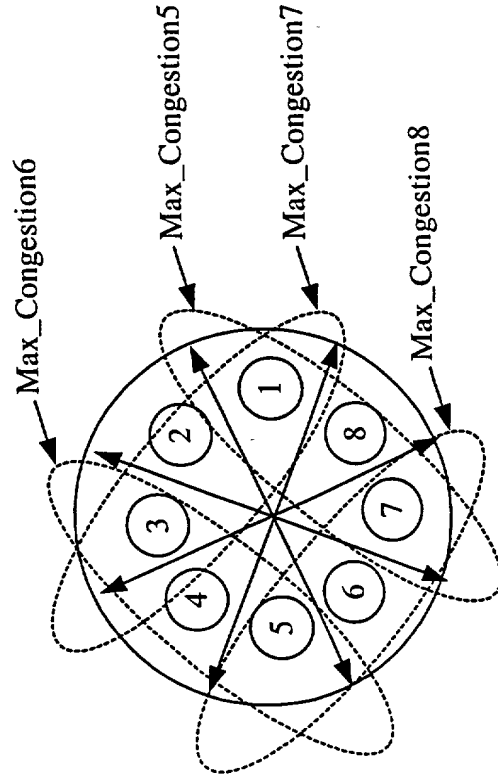


Figure 45

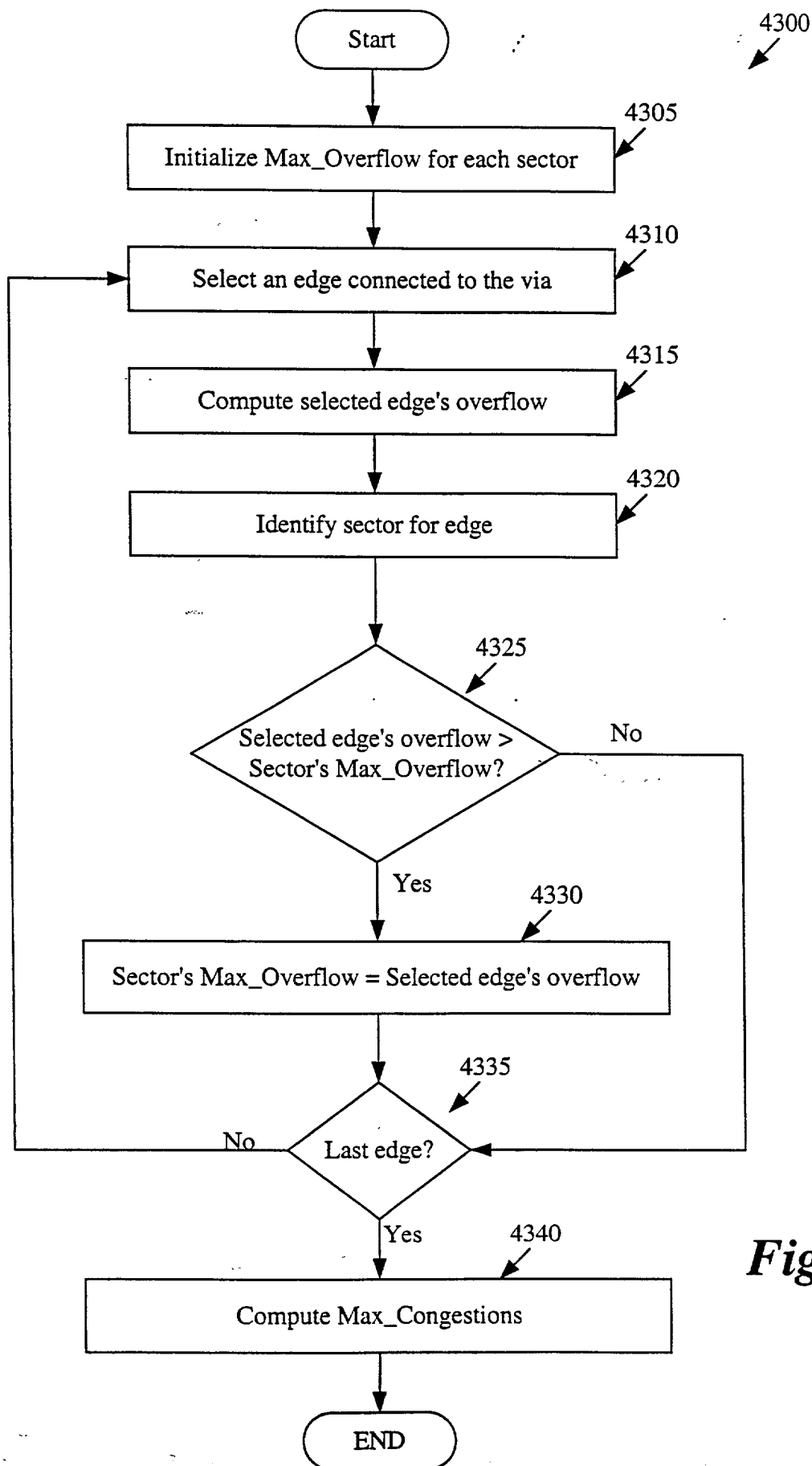


Figure 43

A hand-drawn diagram of a building layout, enclosed in a rectangular frame. The layout consists of two main rooms. The room on the left is labeled '4710' and contains a square table. The room on the right is labeled '4705' and also contains a square table. The rooms are separated by a wall, and there is an entrance area at the bottom. The drawing is done in black ink on a white background.

FIGURE 47

20150102 20150102

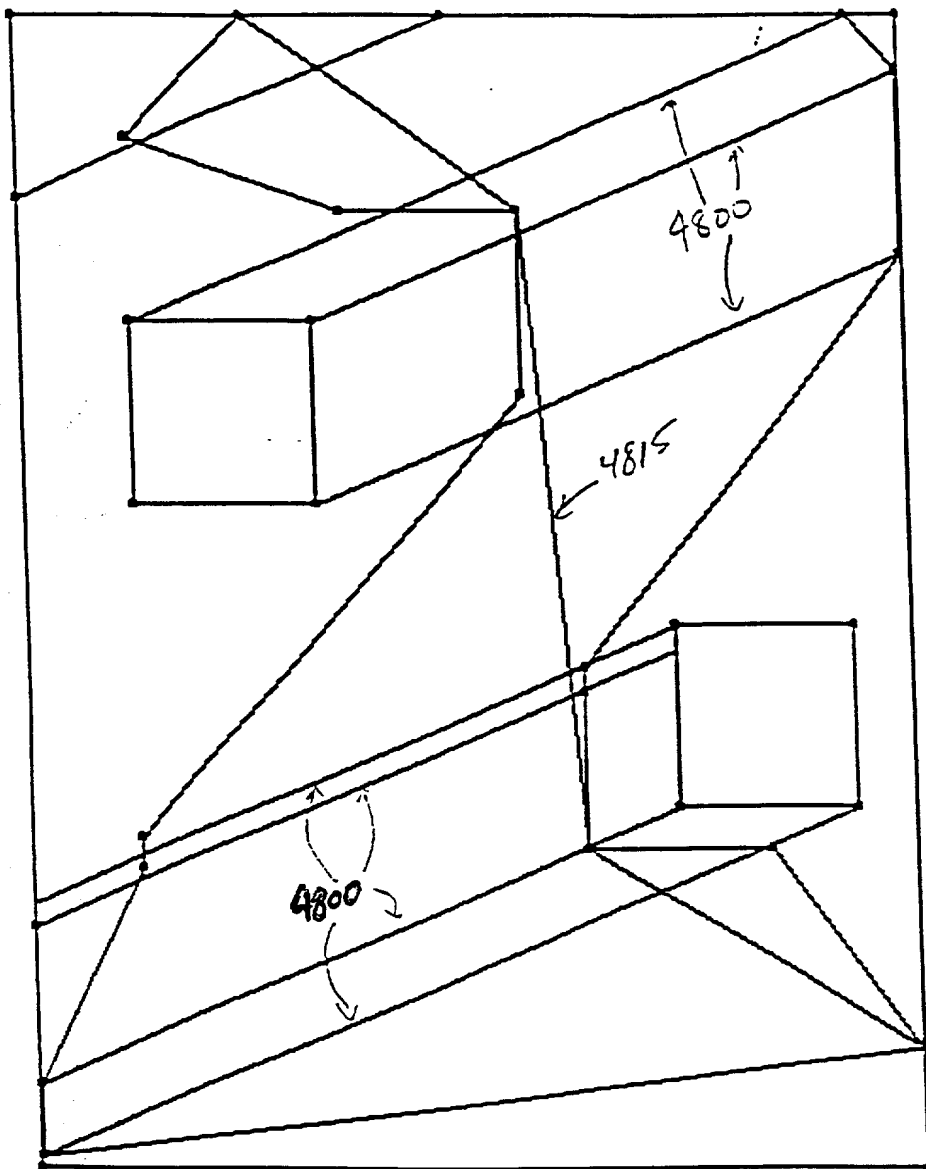


FIGURE 48A

20150102 013102

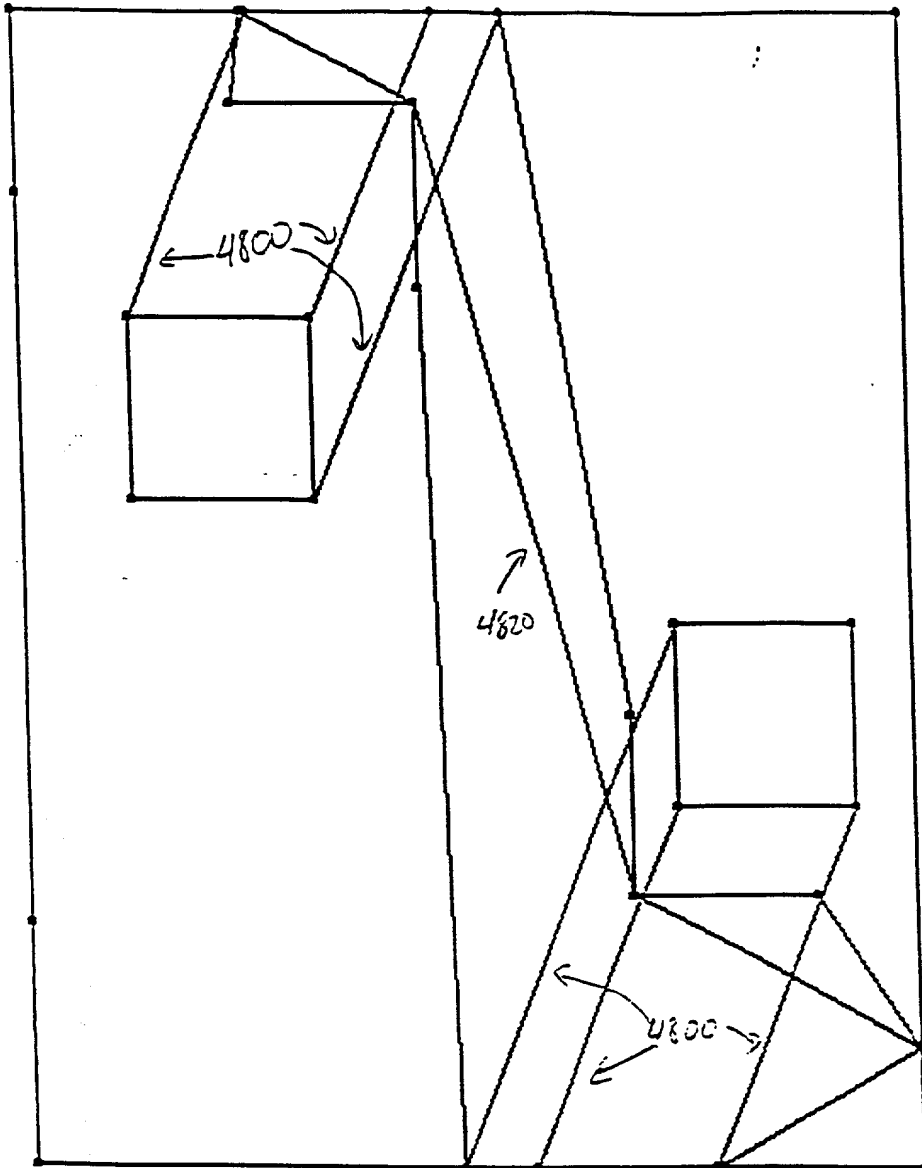


FIGURE 48B

A perspective drawing of two rectangular blocks on a tilted plane. The blocks are positioned one behind the other. Handwritten labels with arrows point to specific features: '4825' points to a point on the top edge of the rear block; '48007' points to a point on the front edge of the rear block; and '48005' points to a point on the bottom edge of the front block. The drawing is enclosed in a rectangular frame.

FIGURE 48C

201510-20159001

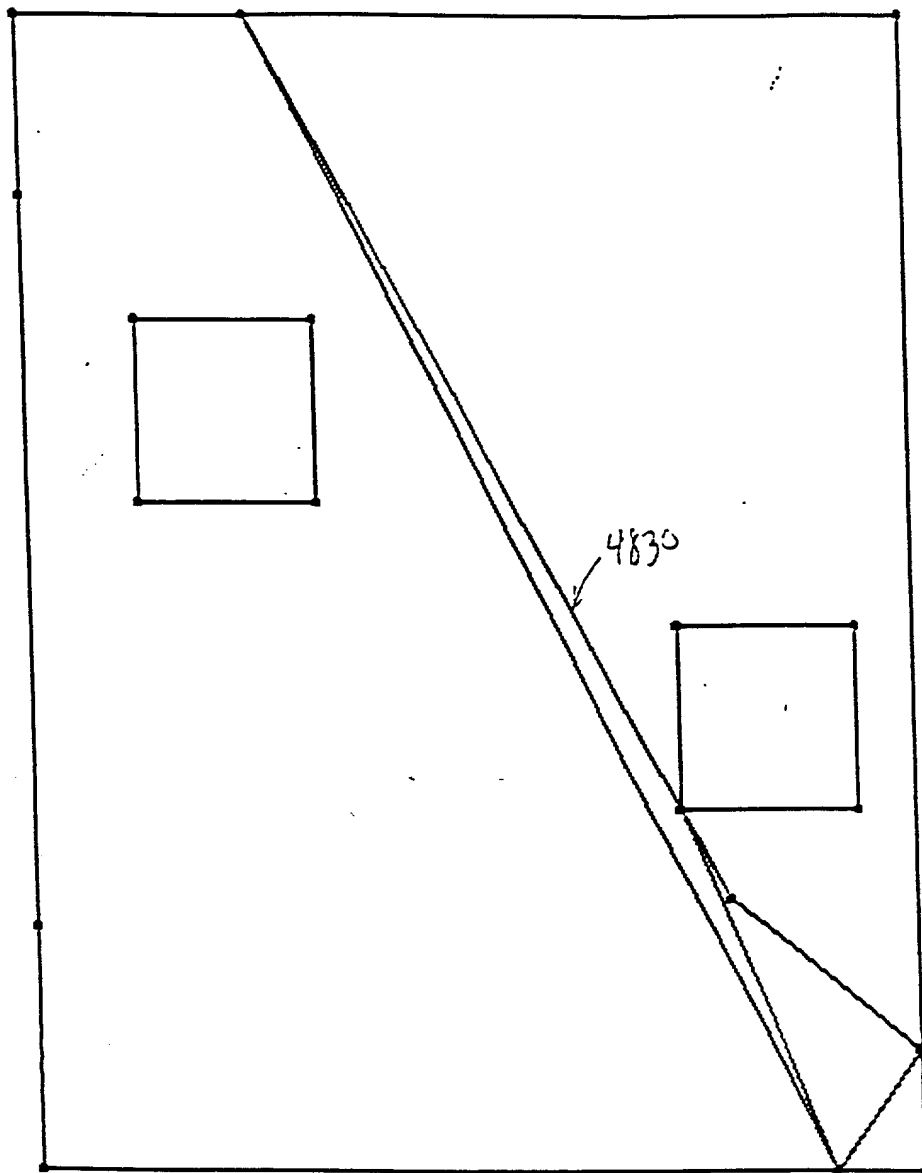


FIGURE 48D



Figure 49A

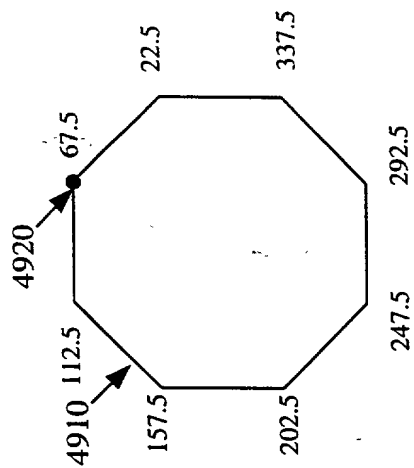


Figure 49B

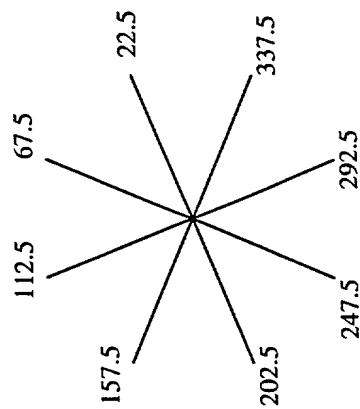


Figure 49C

201605102-013102

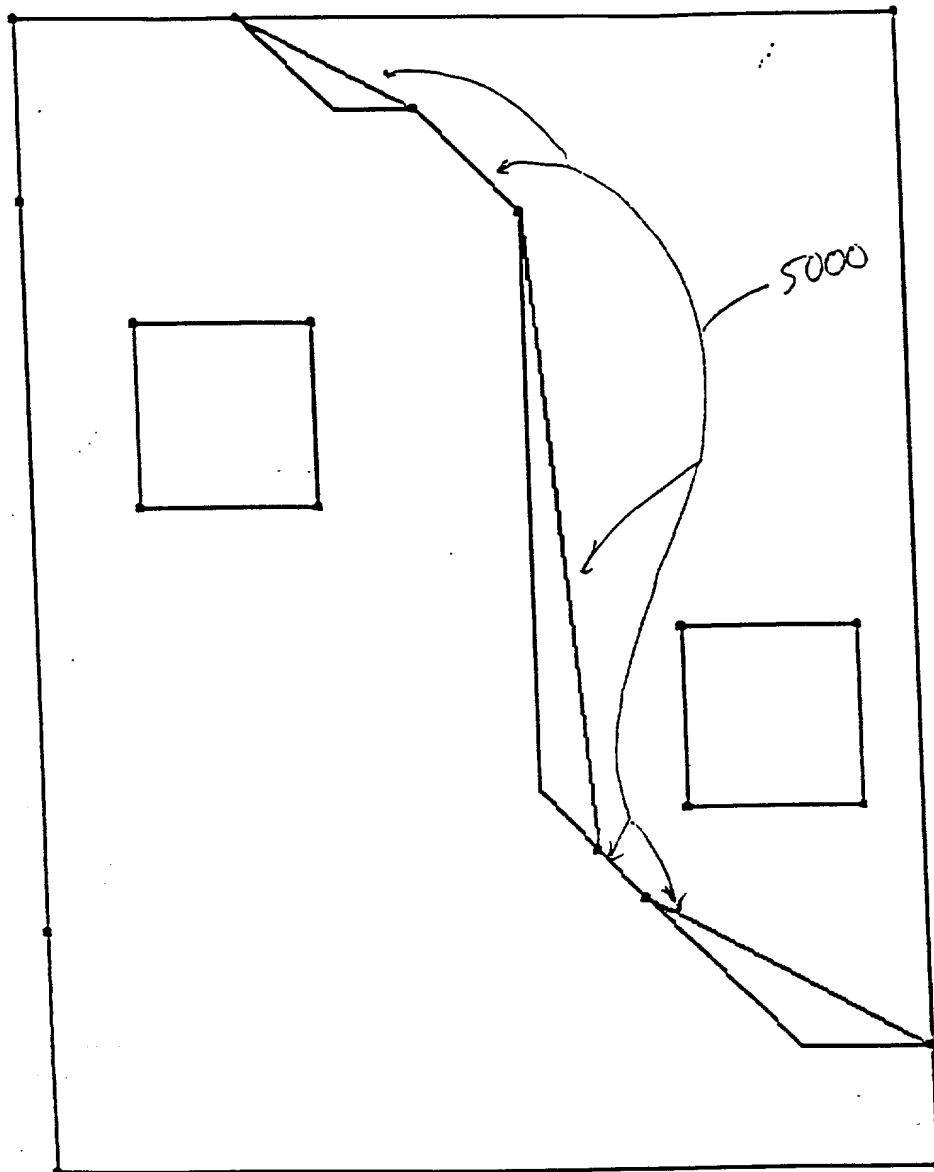


FIGURE 50

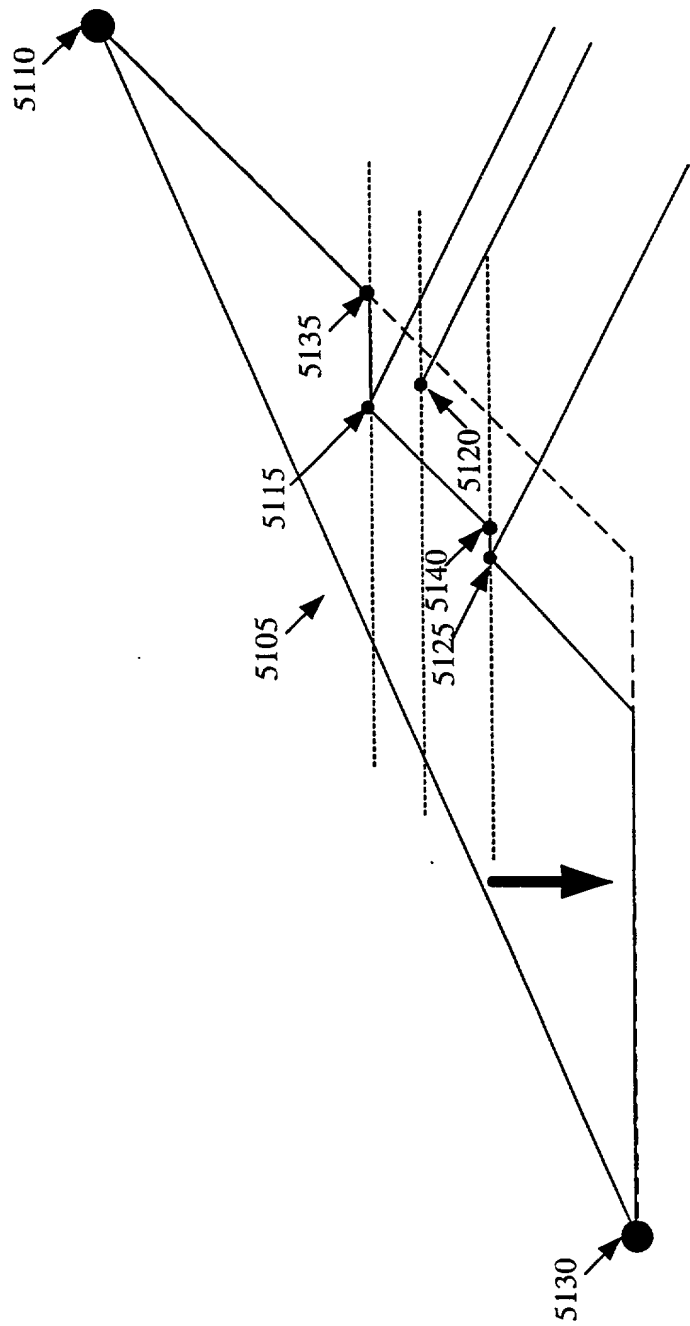


Figure 51

10066102-013102

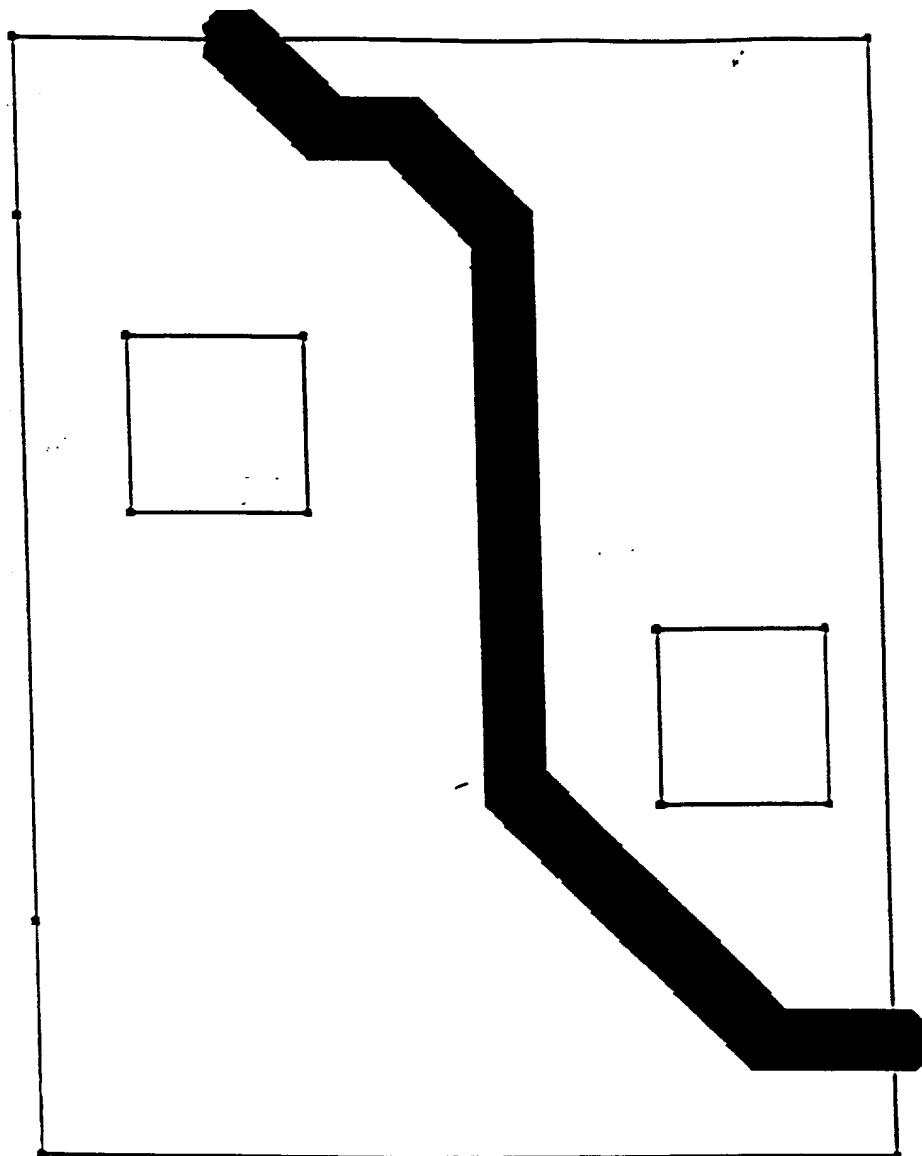


FIGURE 52

201502-013102 10066102-013102

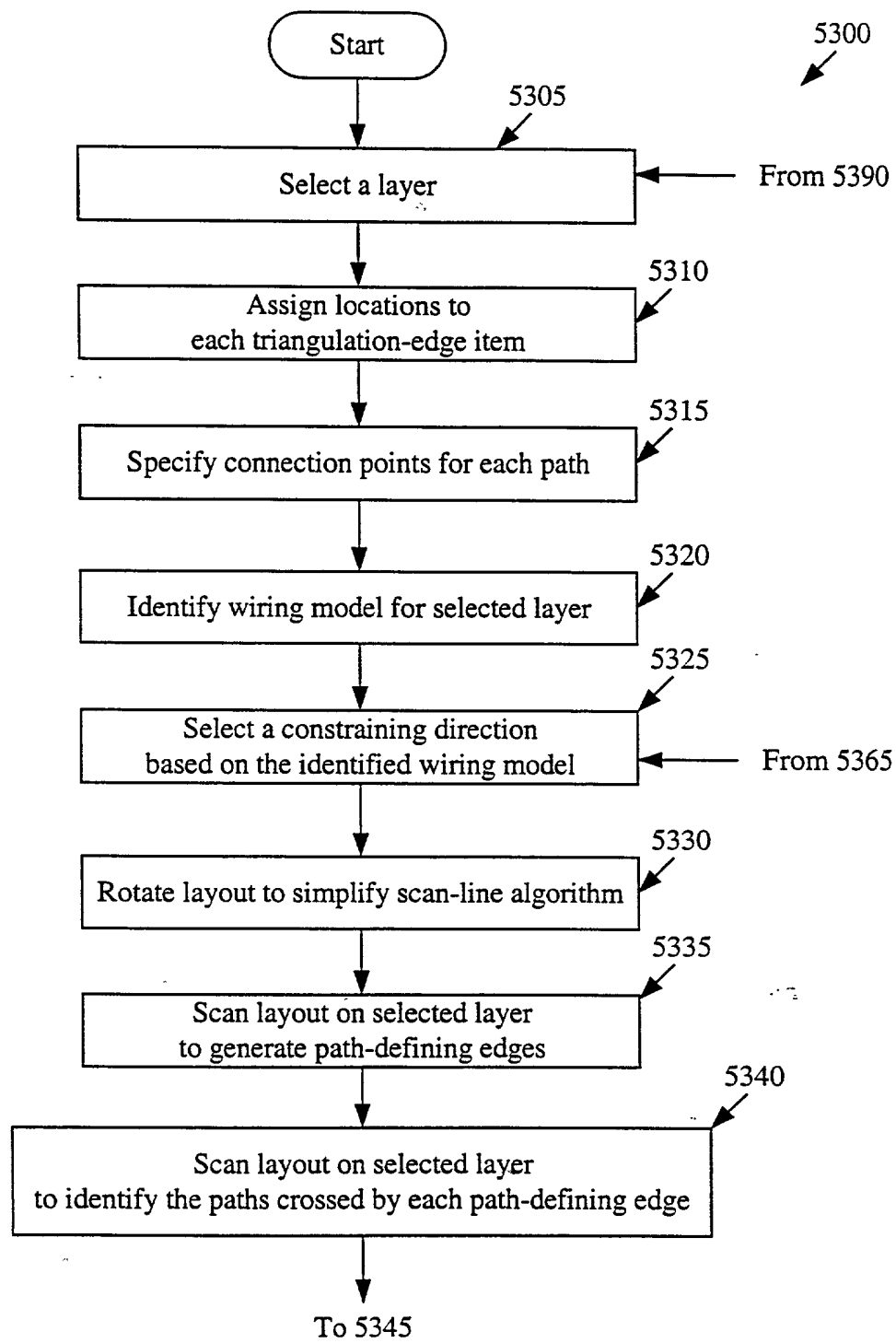


Figure 53

Figure 53: Figure 53A
Figure 53B

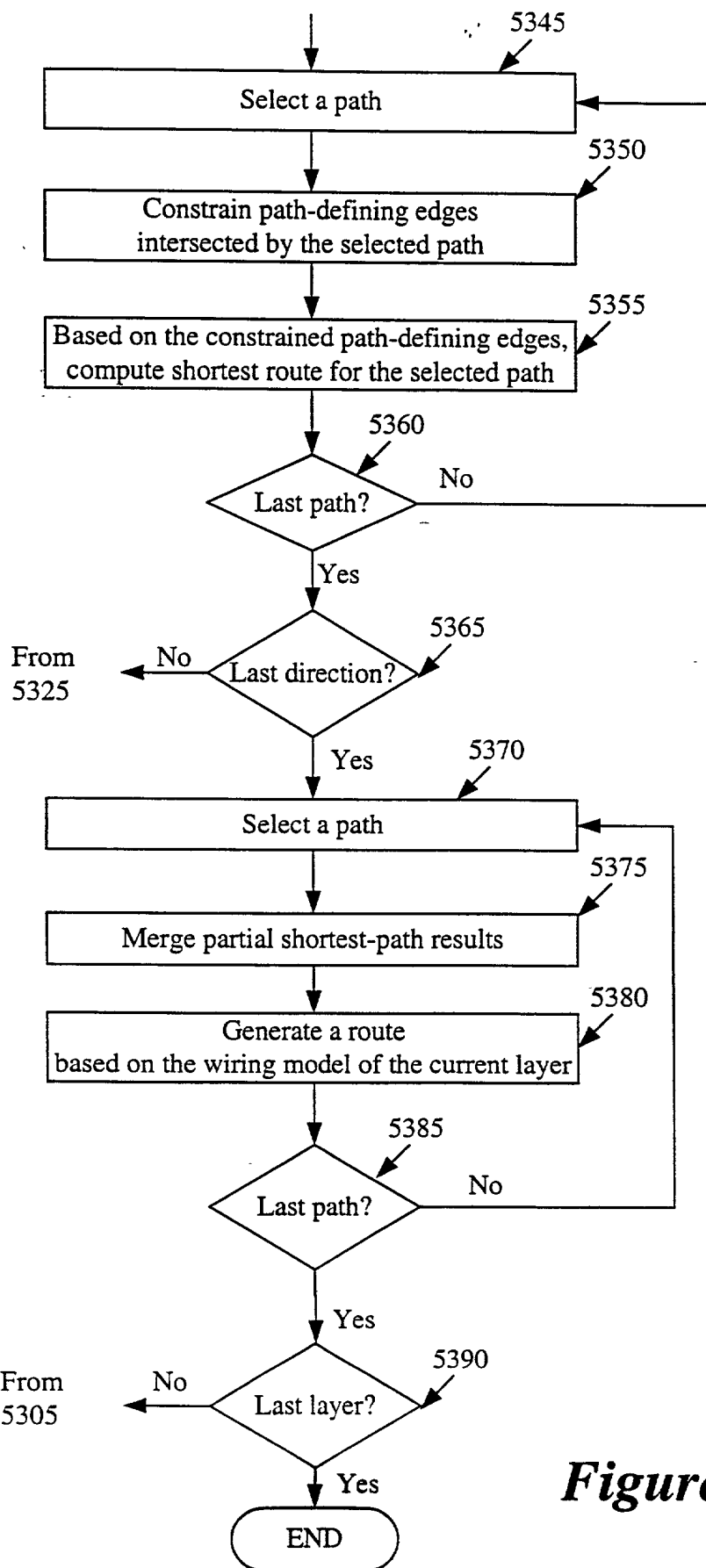


Figure 53B

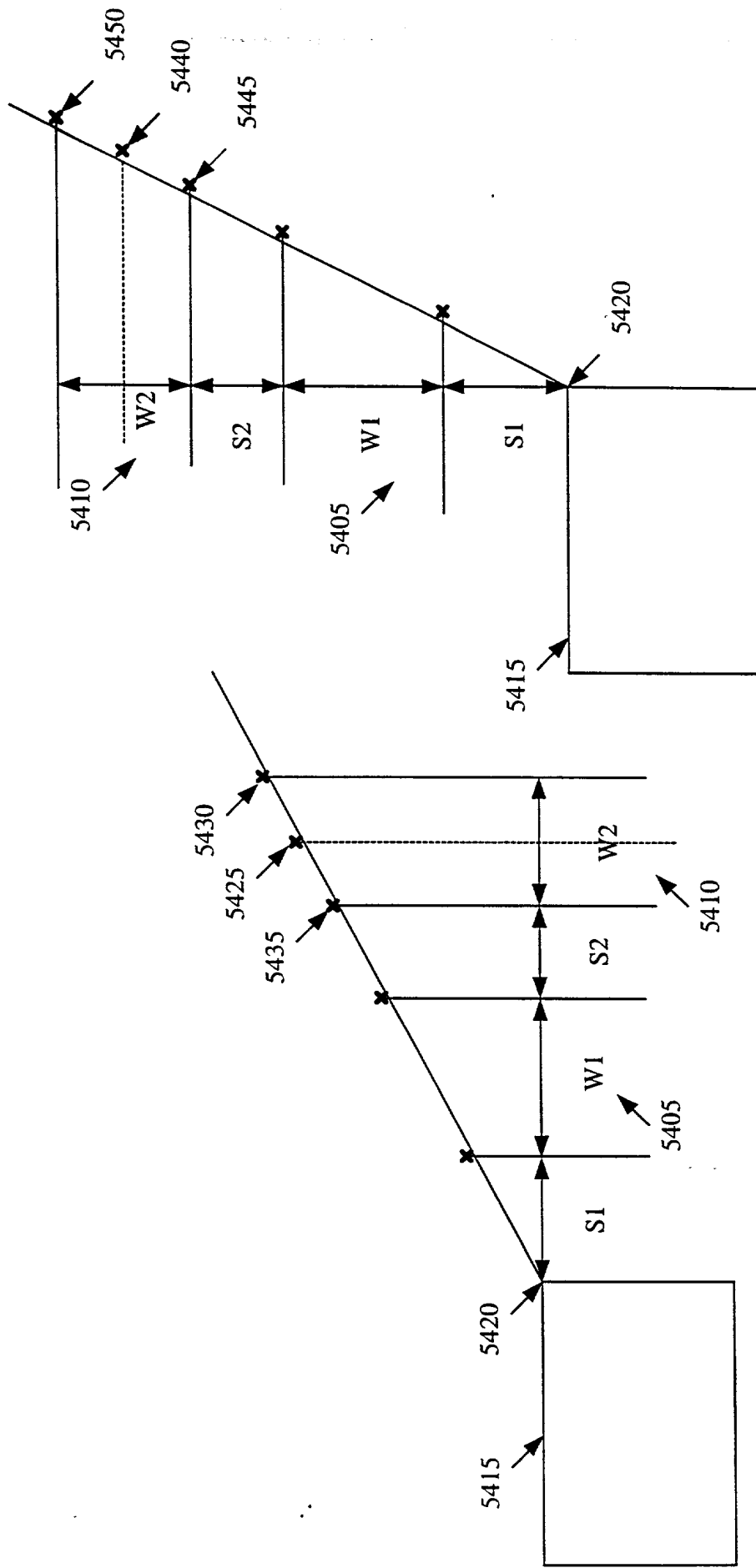


Figure 55

Figure 54

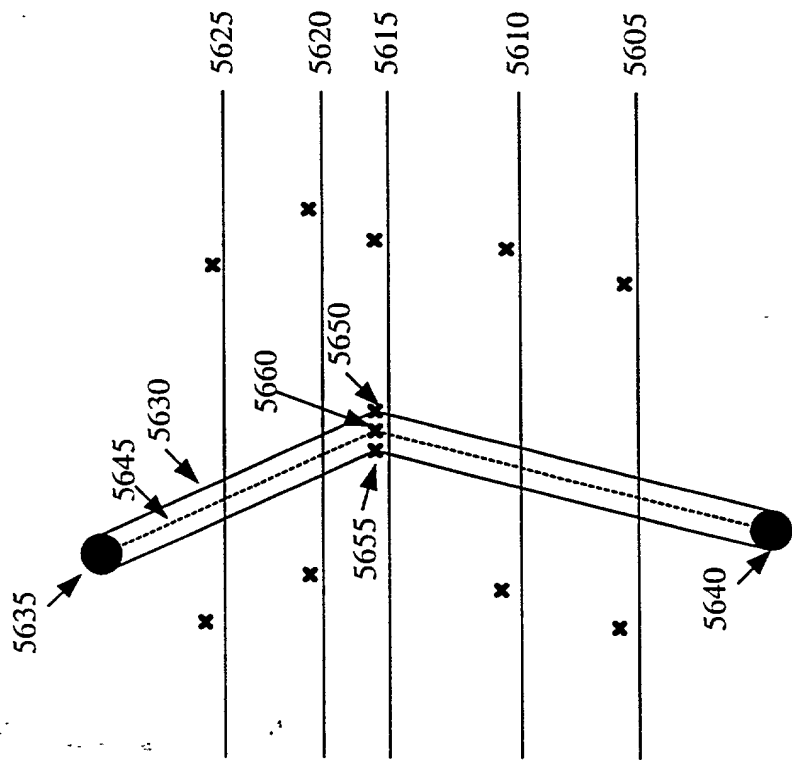


Figure 56

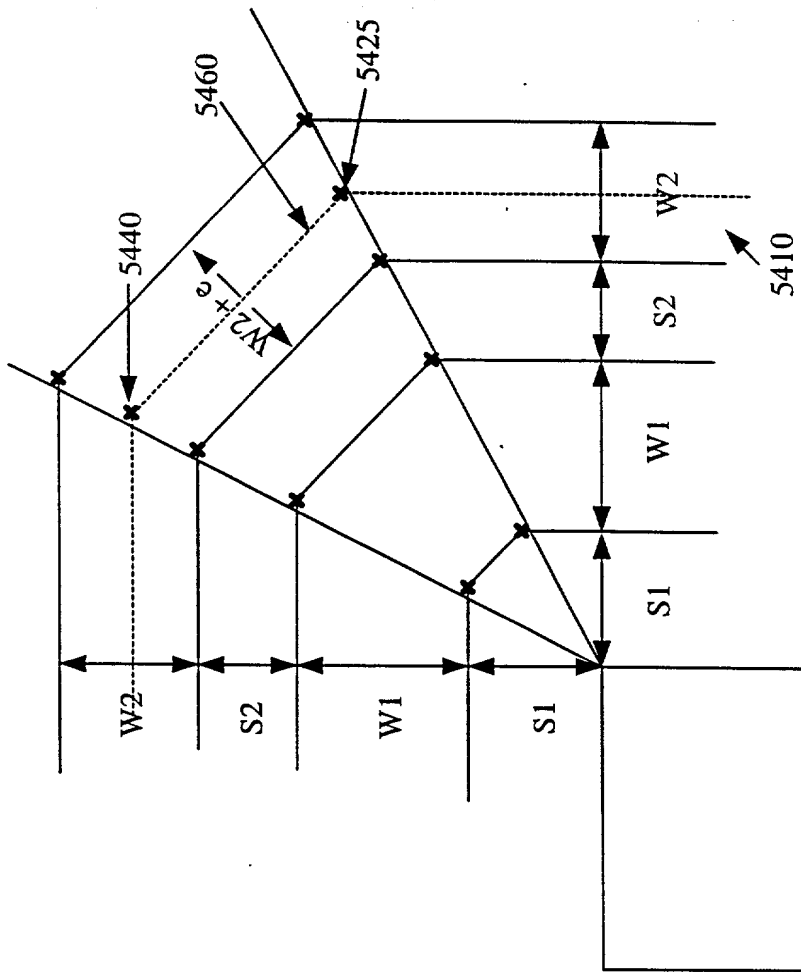


Figure 57

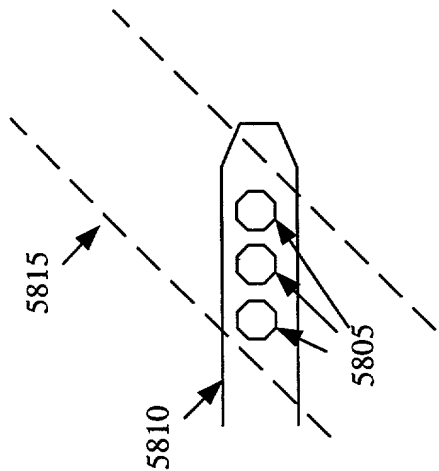


Figure 58

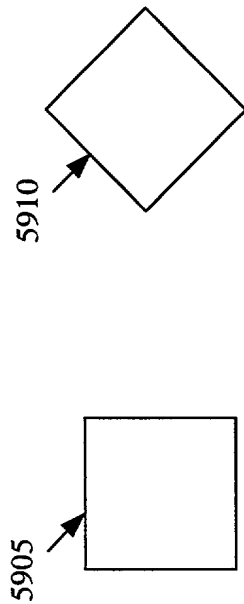


Figure 59

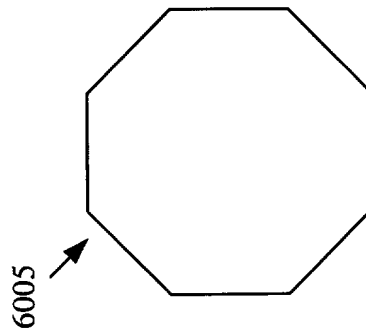


Figure 60

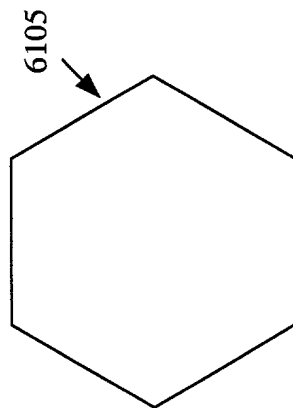


Figure 61

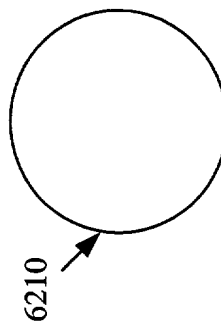


Figure 62

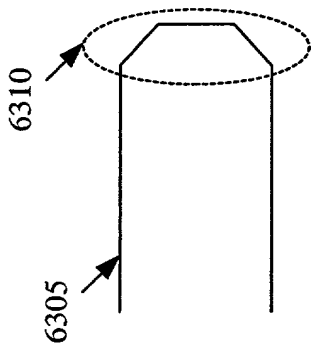


Figure 63

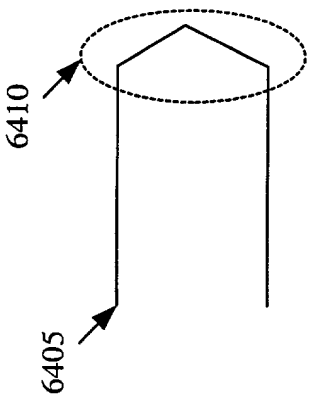


Figure 64

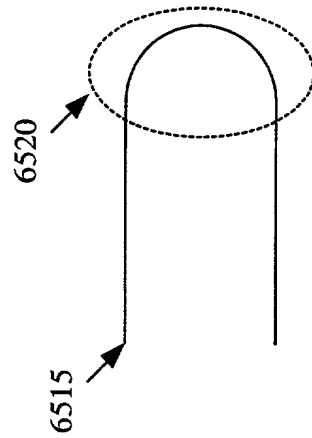
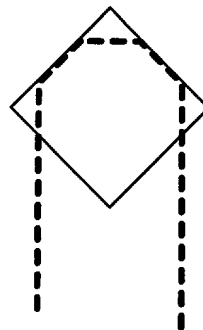


Figure 65

(1)



(2)



(3)

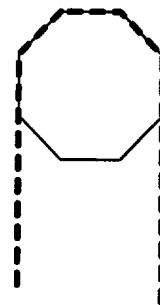
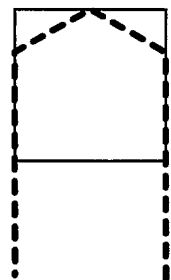


Figure 66

(1)



(2)

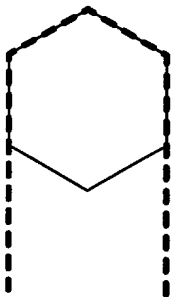


Figure 67

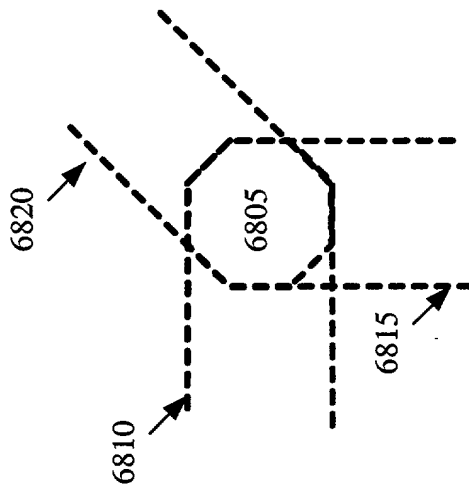


Figure 68

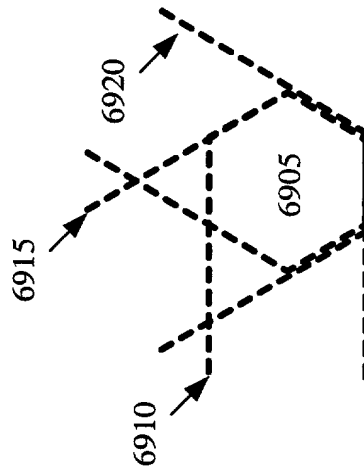


Figure 69

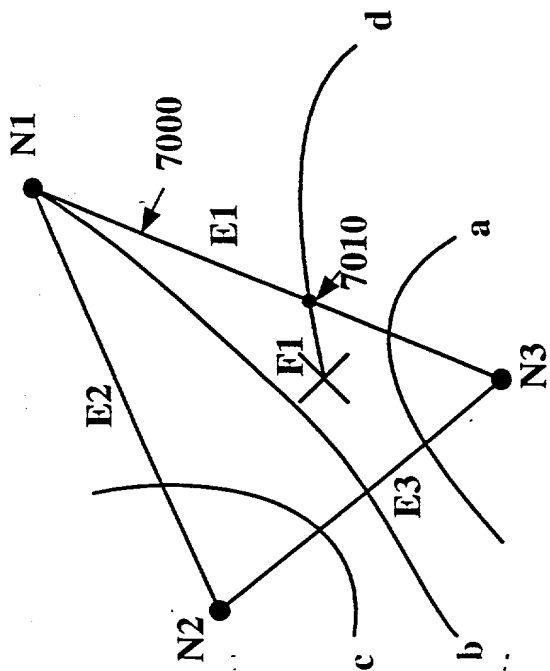


Figure 70

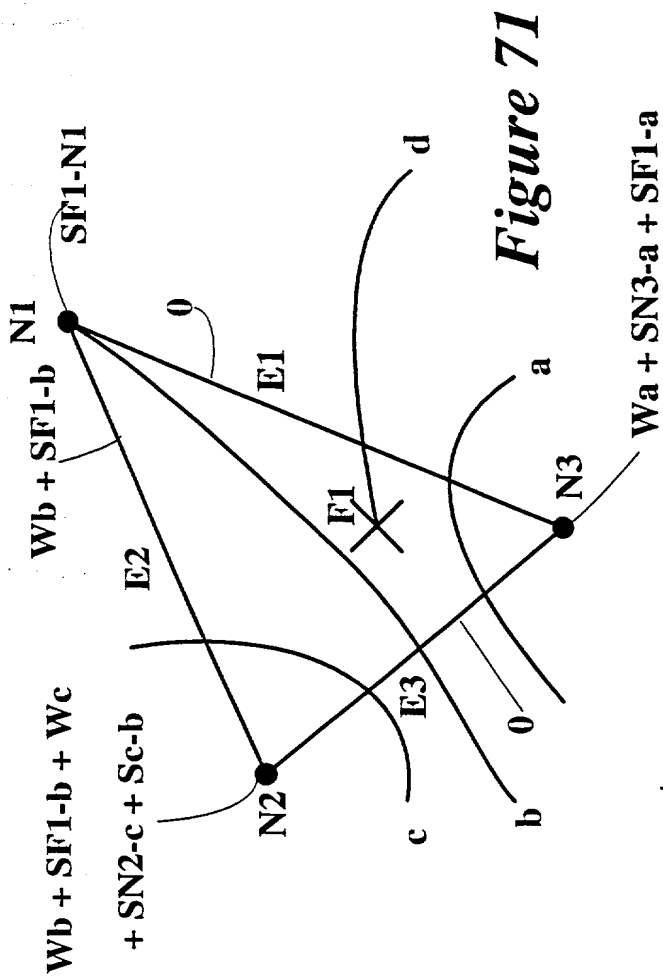


Figure 71

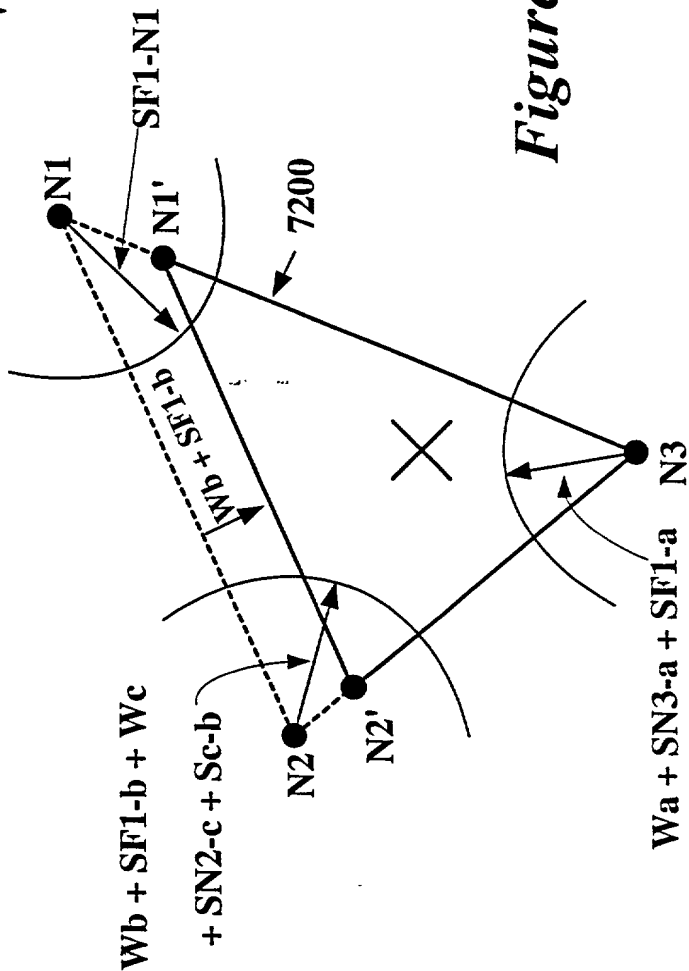


Figure 72

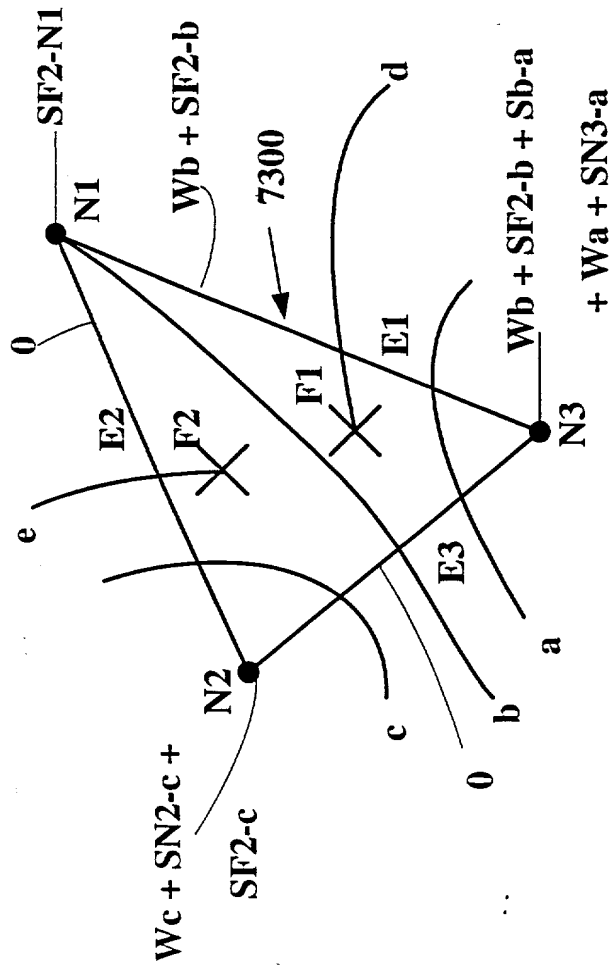


Figure 73

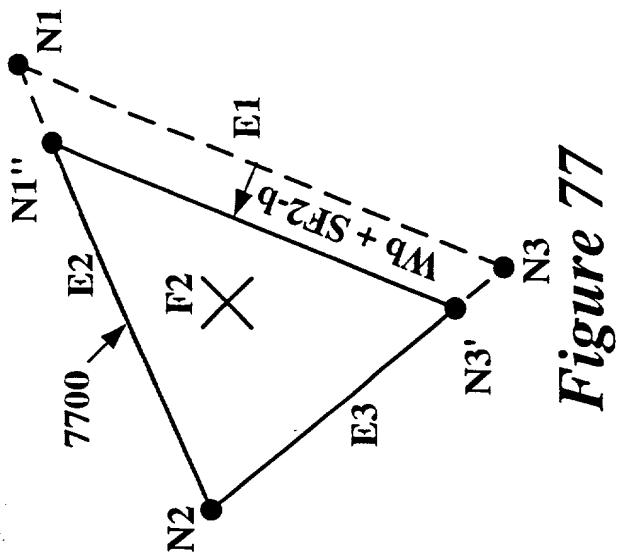


Figure 77

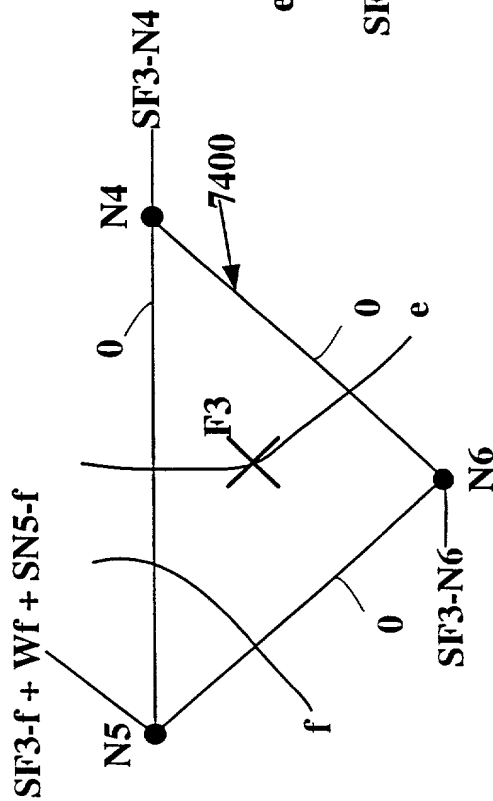


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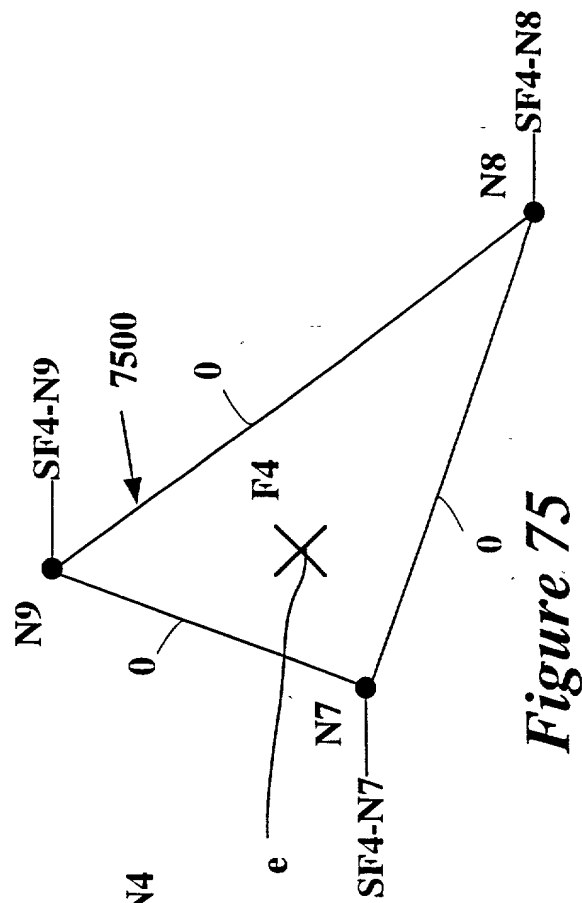


Figure 75

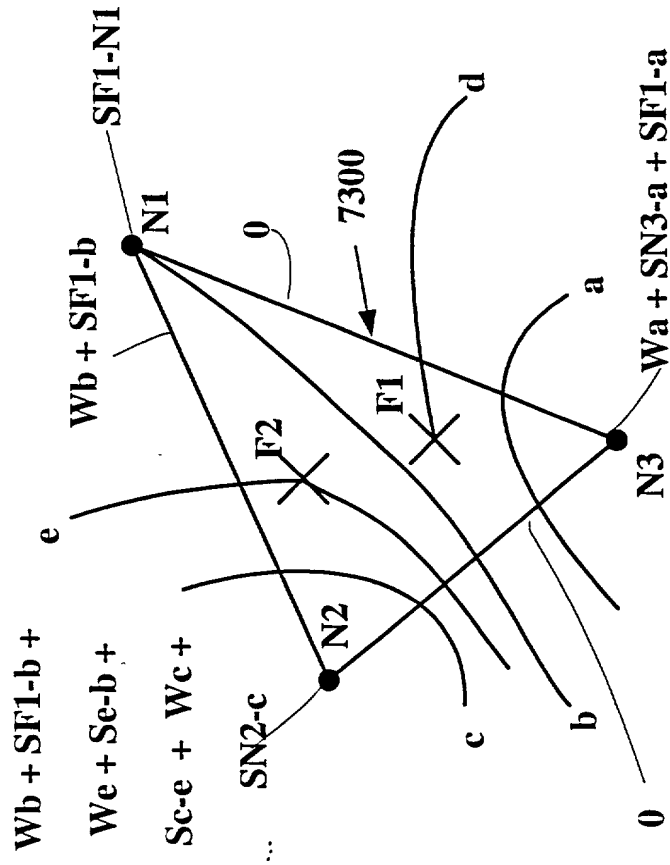


Figure 76

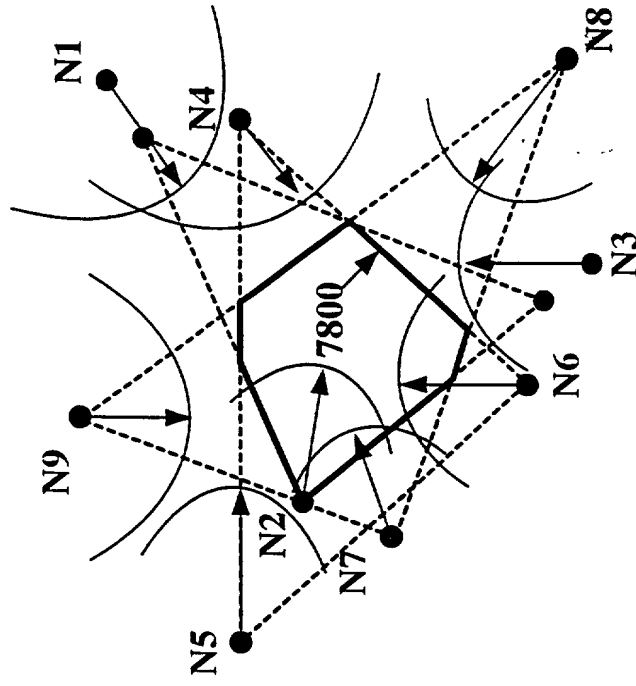


Figure 78

1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

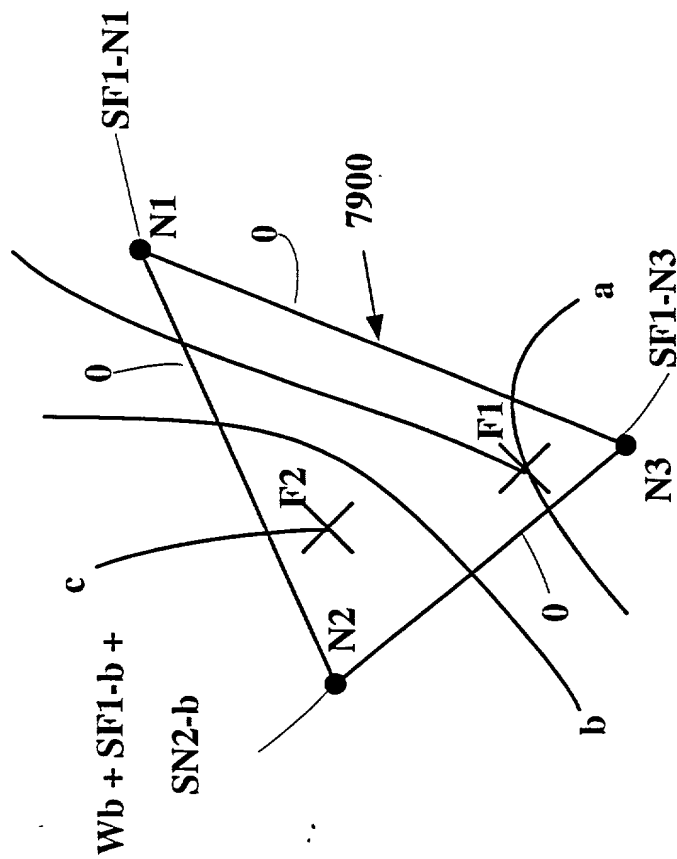


Figure 79

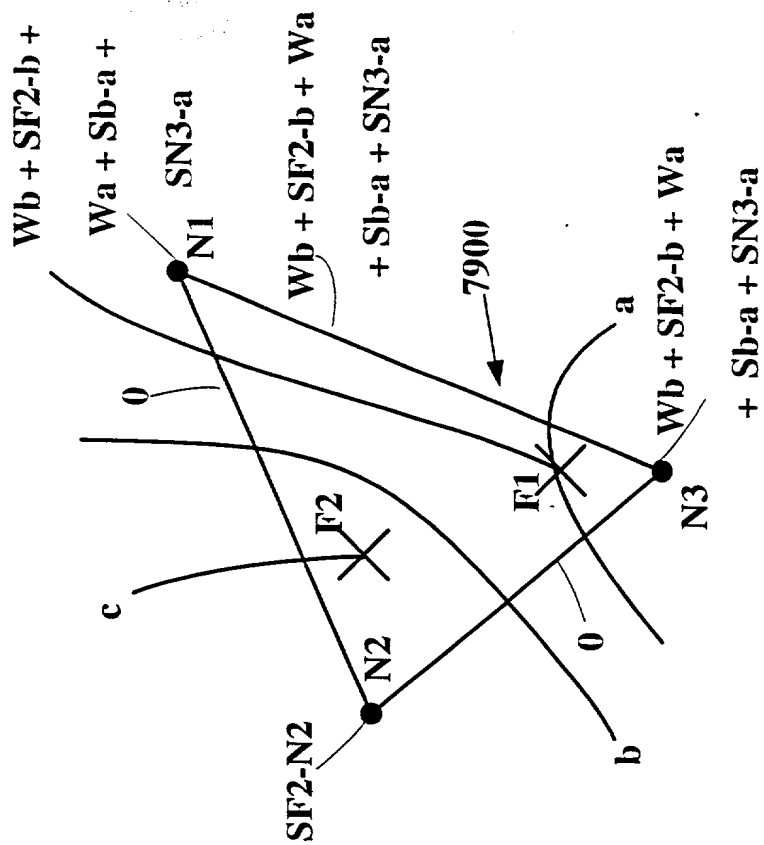


Figure 80

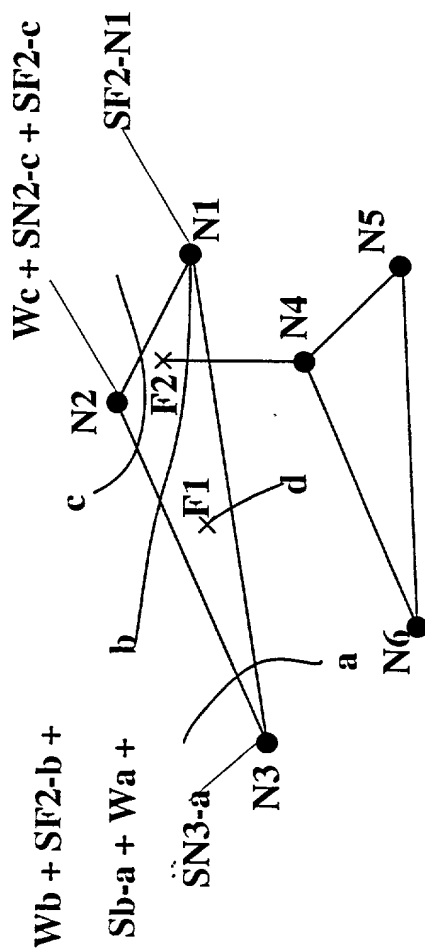


Figure 81

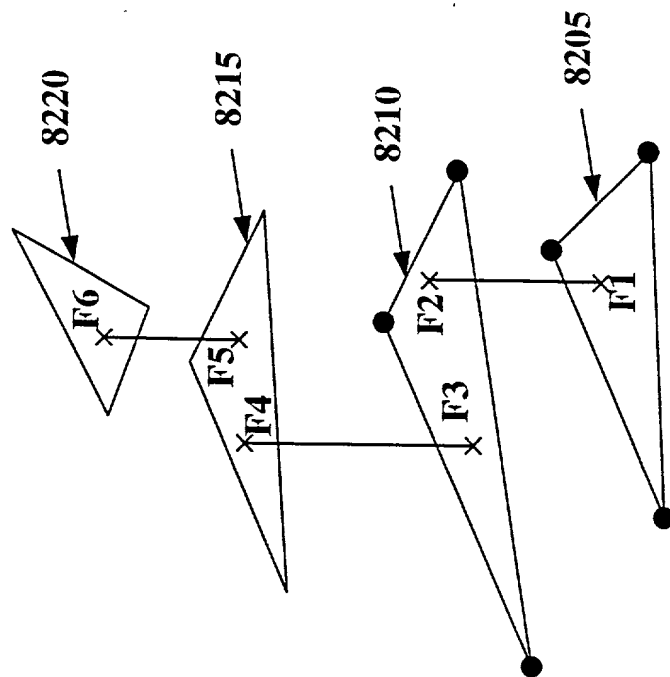


Figure 82

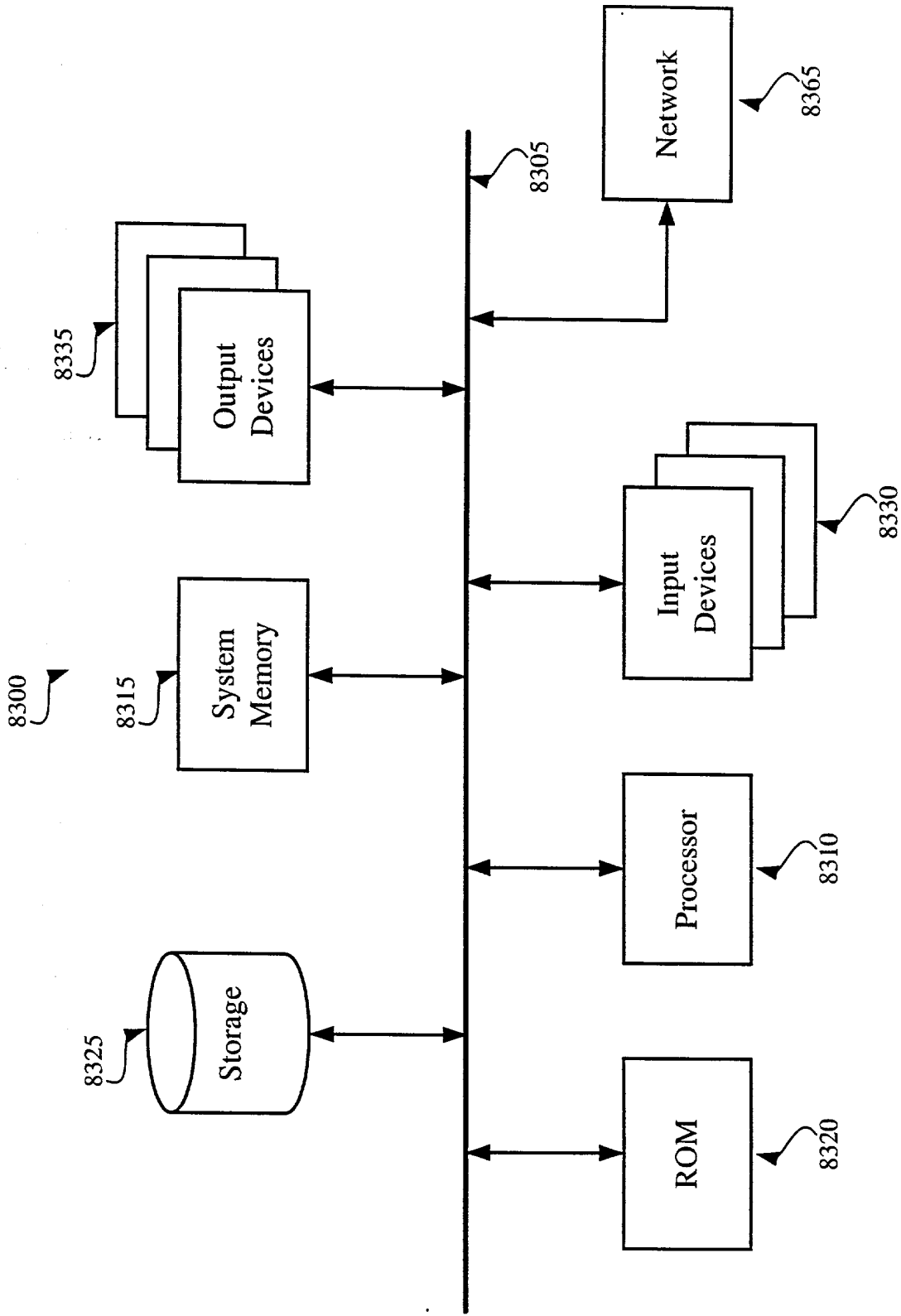


Figure 83